



Test Report

Product Name : GPS Trip Recorder
Model No. : i-Blue747A+
FCC ID. : OUP971260101

Applicant : TRANSYSTEM INC.
Address : No.1-2, Li-Hsin Rd.1, Science-Based Industrial Park,
Hsinchu, Taiwan R.O.C.

Date of Receipt : 2008/09/17
Issued Date : 2008/10/24
Report No. : 089280R-RFUSP06V01
Version : V1.0

The test results relate only to the samples tested.

The test report shall not be reproduced except in full without the written approval of QuieTek Corporation.

Test Report Certification

Issued Date : 2008/10/24

Report No. : 089280R-RFUSP06V01-1



Product Name : GPS Trip Recorder
 Applicant : TRANSYSTEM INC.
 Address : No.1-2, Li-Hsin Rd.1, Science-Based Industrial Park, Hsinchu,
 Taiwan R.O.C.
 Manufacturer : TRANSYSTEM INC.
 Model No. : i-Blue747A+
 FCC ID. : OUP971260101
 Rated Voltage : AC 120 V / 60 Hz
 EUT Voltage : DC 3V (Power by Battery)
 Trade Name : TSI
 Applicable Standard : FCC CFR Title 47 Part 15 Subpart C Section 15.247:2006
 Test Result : Complied

The test results relate only to the samples tested.

The test report shall not be reproduced except in full without the written approval of QuieTek Corporation.

Documented By : Demi Chang

(Demi Chang / Engineering Adm. Specialist)

Tested By : Sheena Huang

(Sheena Huang / Engineer)

Approved By : Roy Wang

(Roy Wang / Manager)

TABLE OF CONTENTS

Description	Page
1. General Information	5
1.1. EUT Description	5
1.2. Operational Description	8
1.3. Test Mode	9
1.4. Tested System Details.....	10
1.5. Configuration of tested System	11
1.6. EUT Exercise Software.....	13
1.7. Test Facility	14
2. Conducted Emission.....	16
2.1. Test Equipment	16
2.2. Test Setup	16
2.3. Limits.....	17
2.4. Test Procedure	17
2.5. Test Specification	17
2.6. Test Result	18
2.7. Test Photo	26
3. Peak Power Output	27
3.1. Test Equipment	28
3.2. Test Setup	28
3.3. Test procedures.....	28
3.4. Limits.....	28
3.5. Test Specification	28
3.6. Test Result	29
4. Radiated Emission	32
4.1. Test Equipment	32
4.2. Test Setup	32
4.3. Limits.....	33
4.4. Test Procedure	33
4.5. Test Specification	33
4.6. Test Result	34
4.7. Test Photo	46
5. RF antenna conducted test	50
5.1. Test Equipment	50
5.2. Test Setup	50
5.3. Limits.....	51
5.4. Test Procedure	51
5.5. Test Specification	51
5.6. Test Result	52
6. Band Edge.....	61
6.1. Test Equipment	61
6.2. Test Setup	61

6.3.	Limits.....	62
6.4.	Test Procedure	62
6.5.	Test Specification	62
6.6.	Test Result	63
7.	Number of hopping frequency	71
7.1.	Test Equipment	71
7.2.	Test Setup	71
7.3.	Limits.....	72
7.4.	Test Procedures	72
7.5.	Test Specification	72
7.6.	Test Result	73
8.	Carrier Frequency Separation	77
8.1.	Test Equipment	77
8.2.	Test Setup	77
8.3.	Limits.....	77
8.4.	Test Procedures	77
8.5.	Test Specification	78
8.6.	Test Result	78
9.	Occupied Bandwidth.....	79
9.1.	Test Equipment	79
9.2.	Test Setup	79
9.3.	Limits.....	80
9.4.	Test Procedures	80
9.5.	Test Specification	80
9.6.	Test Result	81
10.	Dwell Time.....	84
10.1.	Test Equipment	84
10.2.	Test Setup	84
10.3.	Limits.....	85
10.4.	Test Procedures	85
10.5.	Test Specification	85
10.6.	Test Result	86
Attachement.....		90
	EUT Photograph	90

1. General Information

1.1. EUT Description

Product Name	GPS Trip Recorder
Trade Name	TSI
Model No.	i-Blue747A+
Frequency Range	2402~2480MHz
Channel Number	79
Type of Modulation	FHSS
Channel Control	Auto
Antenna Type	Soldered on PCB
Antenna Gain	0dBi

Component	
Car Charger	mobileconn, mb-st1-5050 Non-Shielded, 1.47m
USB Cable	Shielded, 0.57m
Li-ion Battery	HELIX, HX-N3650A RATING: 3.7V
Power Adapter	Sunny, SYS1306-0305-W2 I/P: 100~240V, 0.1A MAX, 50~60Hz, 1~10VA O/P: +5V, 0.5A, 2.5W MAX Cable Out: Non-Shielded, 1.82m

Working Frequency of Each Channel							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
Channel 00	2402 MHz	Channel 20	2422 MHz	Channel 40	2442 MHz	Channel 60	2462 MHz
Channel 01	2403 MHz	Channel 21	2423 MHz	Channel 41	2443 MHz	Channel 61	2463 MHz
Channel 02	2404 MHz	Channel 22	2424 MHz	Channel 42	2444 MHz	Channel 62	2464 MHz
Channel 03	2405 MHz	Channel 23	2425 MHz	Channel 43	2445 MHz	Channel 63	2465 MHz
Channel 04	2406 MHz	Channel 24	2426 MHz	Channel 44	2446 MHz	Channel 64	2466 MHz
Channel 05	2407 MHz	Channel 25	2427 MHz	Channel 45	2447 MHz	Channel 65	2467 MHz
Channel 06	2408 MHz	Channel 26	2428 MHz	Channel 46	2448 MHz	Channel 66	2468 MHz
Channel 07	2409 MHz	Channel 27	2429 MHz	Channel 47	2449 MHz	Channel 67	2469 MHz
Channel 08	2410 MHz	Channel 28	2430 MHz	Channel 48	2450 MHz	Channel 68	2470 MHz
Channel 09	2411 MHz	Channel 29	2431 MHz	Channel 49	2451 MHz	Channel 69	2471 MHz
Channel 10	2412 MHz	Channel 30	2432 MHz	Channel 50	2452 MHz	Channel 70	2472 MHz
Channel 11	2413 MHz	Channel 31	2433 MHz	Channel 51	2453 MHz	Channel 71	2473 MHz
Channel 12	2414 MHz	Channel 32	2434 MHz	Channel 52	2454 MHz	Channel 72	2474 MHz
Channel 13	2415 MHz	Channel 33	2435 MHz	Channel 53	2455 MHz	Channel 73	2475 MHz
Channel 14	2416 MHz	Channel 34	2436 MHz	Channel 54	2456 MHz	Channel 74	2476 MHz
Channel 15	2417 MHz	Channel 35	2437 MHz	Channel 55	2457 MHz	Channel 75	2477 MHz
Channel 16	2418 MHz	Channel 36	2438 MHz	Channel 56	2458 MHz	Channel 76	2478 MHz
Channel 17	2419 MHz	Channel 37	2439 MHz	Channel 57	2459 MHz	Channel 77	2479 MHz
Channel 18	2420 MHz	Channel 38	2440 MHz	Channel 58	2460 MHz	Channel 78	2480 MHz
Channel 19	2421 MHz	Channel 39	2441 MHz	Channel 59	2461 MHz		

The system receivers have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shift frequencies in synchronization with the transmitted signals. Frequency hopping spread spectrum systems are not required to employ all available hopping channels during each transmission. The transmitter is presented with a continuous data stream. In addition, a system employing short transmission bursts must comply with the definition of a frequency hopping system and must distribute its 79 channels and over the minimum number of hopping channels (75 channels).

The incorporation of intelligence within a frequency hopping spread spectrum system that permits the system to recognize other users within the spectrum band so that it individually and independently chooses and adapts its hop sets to avoid hopping on occupied channels is permitted. The coordination of frequency hopping systems in any other manner for the express purpose of avoiding the simultaneous occupancy of individual hopping frequencies by multiple transmitters is not permitted.

Note:

1. This device is a GPS Trip Recorder including a 2.4GHz BT receiving function, and transmitting function.
2. These test results on a sample of the equipment for the purpose of demonstrating compliance with Part 15 Subpart C Paragraph 15.247 for spread spectrum devices.
3. Regards to the frequency band operation; the lowest , middle and highest frequency of channel were selected to perform the test, and then shown on this report.
4. This device is a composite device in accordance with Part 15 regulations. The function receiving was measured and made a test report that the report number is 089280R-RFUSP01V02 under Declaration of Conformity.

1.2. Operational Description

The EUT is 2.4GHz wireless GPS Trip Recorder Channel Bluetooth GPS Data Logger. Bluetooth technology operates frequency band at 2402MHz to 2480MHz, Bluetooth Version is V1.2 / SPP profile.

Using a spread spectrum, frequency hopping . The signal hops among 79 frequencies at 1 MHz intervals to give a high degree of interference immunity.

This adaptive hopping allows for more efficient transmission within the spectrum, providing users with greater performance even if using other technologies along with Bluetooth technology.

Some vehicles having heavy metallic sun protecting coating on windshields may affect GPS signal receptions. Driving in and around high buildings may affect GPS signal receptions. In general, any GPS receiver performs best in open space where it can see clear sky. iBT-GPS outputs data every second, therefore the actual position and the position shown in your map may have slight time delay. This may happen when you drive at higher speed or make a turn around a corner.

1.3. Test Mode

QuieTek has verified the construction and function in typical operation. All the test modes were carried out with the EUT in transmitting operation, which was shown in this test report and defined as follows:

Pre-Test Mode	
EMI	Mode 1: Transmit (USB) Mode 2: Transmit (Car Charger) Mode 3: Transmit (Adapter)
Final Test Mode	
EMI	Mode 1: Transmit (USB) Mode 2: Transmit (Car Charger) Mode 3: Transmit (Adapter)

Emission	Mode 1
Conducted Emission	Yes
Peak Power Output	Yes
Radiated Emission	Yes
Band Edge	Yes
Channel of Number	Yes
Channel Separation	Yes
Occupied Bandwidth	Yes
Dwell Time	Yes

1.4. Tested System Details

The types for all equipments, plus descriptions of all cables used in the tested system (including inserted cards) are:

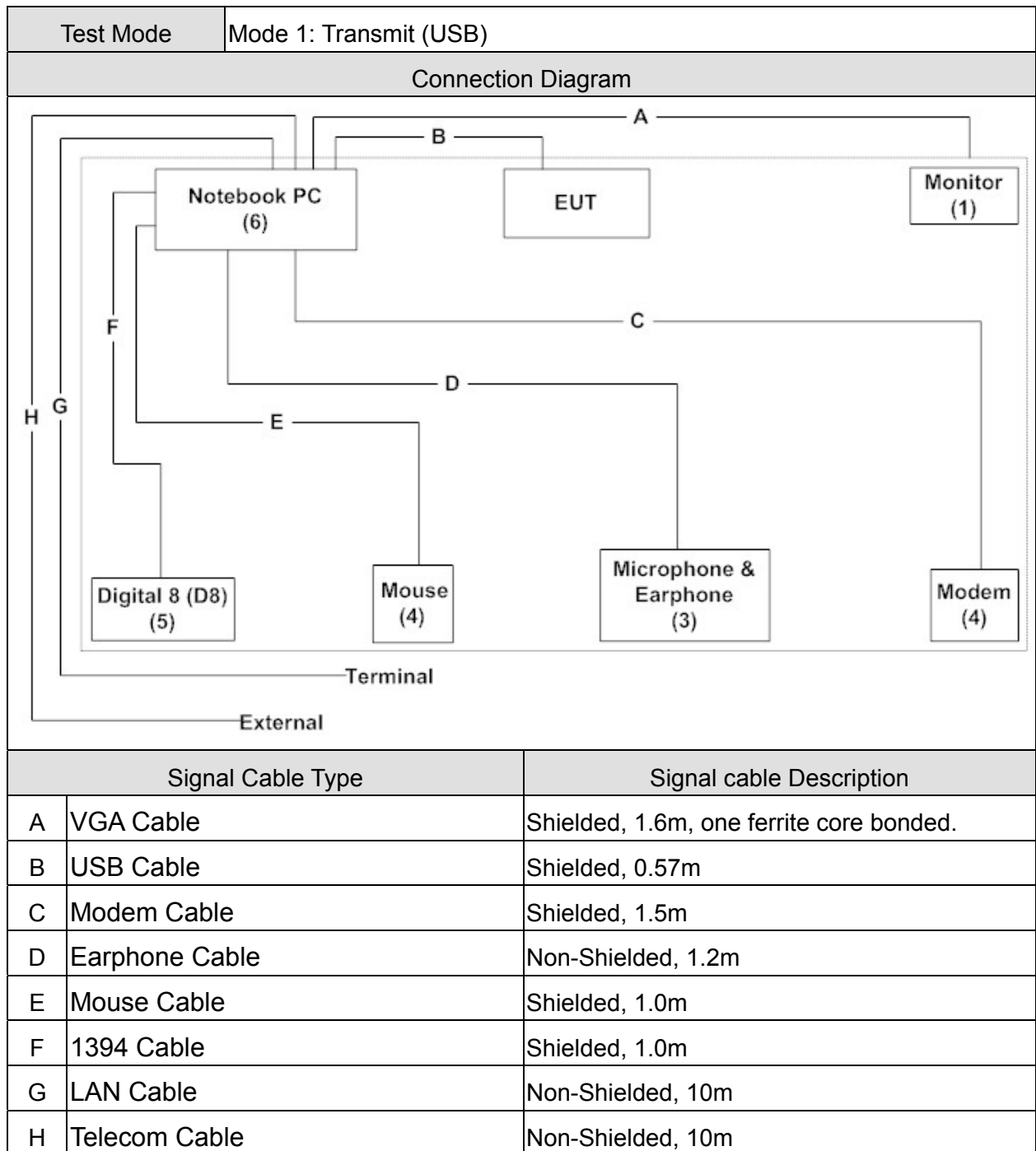
Test Mode		Mode 1: Transmit (USB)				
Product		Manufacturer	Model No.	Serial No.	FCC ID	Power Cord
1	Monitor	GENVINE	G585	FK9106875	DoC	Non-shielded, 1.8m
2	Modem	ACEEX	DM-1414	0102027544	DoC	Non-shielded, 1.6m
3	Microphone & Earphone	Fujiei	SBZ-38	N/A	DoC	--
4	Mouse	Logitech	M-SBF83	HCA52200288	DoC	--
5	Digital 8 (D8)	SONY	DCR-TRV110	P35209	DoC	--
6	Notebook PC	DELL	LATITUDE D400	GK43D1S	DoC	Non-shielded, 1.7m, a ferrite core bonded

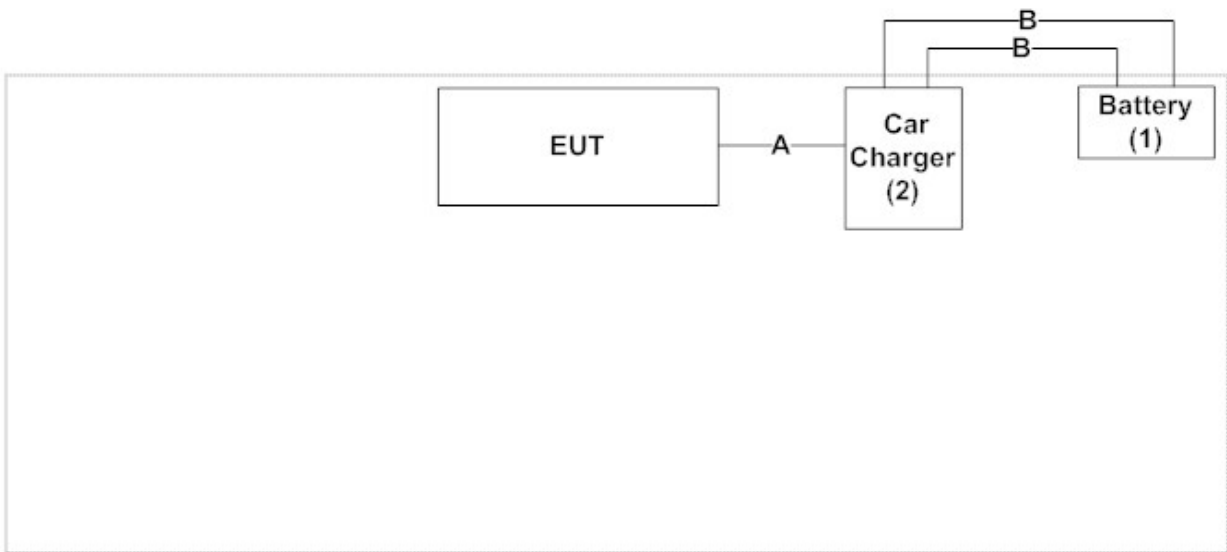
Test Mode		Mode 2: Transmit (Car Charger)				
Product		Manufacturer	Model No.	Serial No.	FCC ID	Power Cord
1	Li-ion Battery	HELIX,	HX-N3650A	N/A	DoC	--
2	Car charger	mobileconn	mb-st1-5050	N/A	DoC	Non-Shielded, 1.47m

Test Mode		Mode 3: Transmit (Adapter)				
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N/A

1.5. Configuration of tested System



Test Mode		Mode 2: Transmit (Car Charger)	
Connection Diagram			
			
Signal Cable Type		Signal cable Description	
A	Power Line	Non-Shielded, 1.47m	
B	Power Line	Non-Shielded, 1m, 2 PCS	

Test Mode	Mode 3: Transmit (Adapter)
Connection Diagram	
EUT	

1.6. EUT Exercise Software

1	Setup the EUT and Notebook PC as shown on 1.5.
2	Turn on the power of all equipment.
3	Data will be continue transmitting through EUT.
4	Repeat the above procedure (2) to (3)

1.7. Test Facility

Ambient conditions in the laboratory:

Items	Test Item	Required (IEC 68-1)	Actual
Temperature (°C)	FCC PART 15 B 15.107 Conducted Emission	15 - 35	25
Humidity (%RH)		25 - 75	50
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.247 Peak Power Output (FHSS)	15 - 35	26
Humidity (%RH)		25 - 75	51
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.247 Radiated Emission (FHSS)	15 - 35	25
Humidity (%RH)		25 - 75	54
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.247 Band Edge (FHSS)	15 - 35	25
Humidity (%RH)		25 - 75	50
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.247 Channel Of Number (FHSS)	15 - 35	25
Humidity (%RH)		25 - 75	53
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.247 Channel Separation (FHSS)	15 - 35	26
Humidity (%RH)		25 - 75	51
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.247 Occupied Bandwidth (FHSS)	15 - 35	25
Humidity (%RH)		25 - 75	50
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.247 Dwell Time (FHSS)	15 - 35	26
Humidity (%RH)		25 - 75	52
Barometric pressure (mbar)		860 - 1060	950-1000

Site Description:

January 24, 2005 File on
Federal Communications Commission
Laboratory Division
7435 Oakland Mills Road
Columbia, MD 21046
Registration Number: 365520



Accredited by TAF
Accreditation Number: 1313
Effective through: December 27, 2010



Accredited by NVLAP
NVLAP Lab Code: 200347-0
Effective through: September 30, 2009



Site Name: Quietek Corporation
Site Address: No.75-1, Wang-Yeh Valley, Yung-Hsing,
Chiung-Lin, Hsin-Chu County,
Taiwan, R.O.C.
TEL : 886-3-592-8858 / FAX : 886-3-592-8859
E-Mail : service@quietek.com

2. Conducted Emission

2.1. Test Equipment

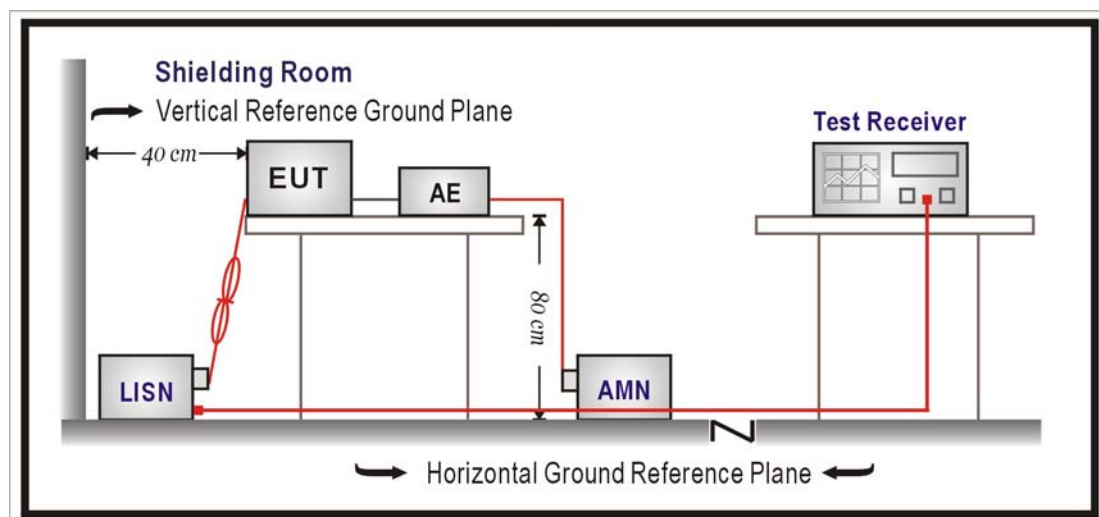
The following test equipment are used during the test:

Conducted Emission / SR3

Instrument	Manufacturer	Type No.	Serial No	Cal. Date
4-Wire ISN	R & S	ENY 41	837032/001	2008/04/15
Double 2-Wire ISN	R & S	ENY 22	835354/008	2008/04/15
LISN	R & S	ESH3-Z5	836679/022	2008/06/17
LISN	R & S	ESH3-Z5	836679/013	2007/12/30
Pulse Limiter	R & S	ESH3-Z2	100411	2007/11/16
Test Receiver	R & S	ESCS 30	100149	2007/11/15

Note: All equipment upon which need to calibrated are with calibration period of 1 year.

2.2. Test Setup



2.3. Limits

FCC Part 15 Subpart C Paragraph 15.207 Limits (dBuV)		
Frequency MHz	QP	AV
0.15 - 0.50	66-56	56-46
0.50-5.0	56	46
5.0 - 30	60	50

Remarks : In the above table, the tighter limit applies at the band edges.

2.4. Test Procedure

The EUT was setup and tested according to ANSI C63.4, 2003.

The EUT and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refers to the block diagram of the test setup and photographs.)

Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4: 2003 on conducted measurement.

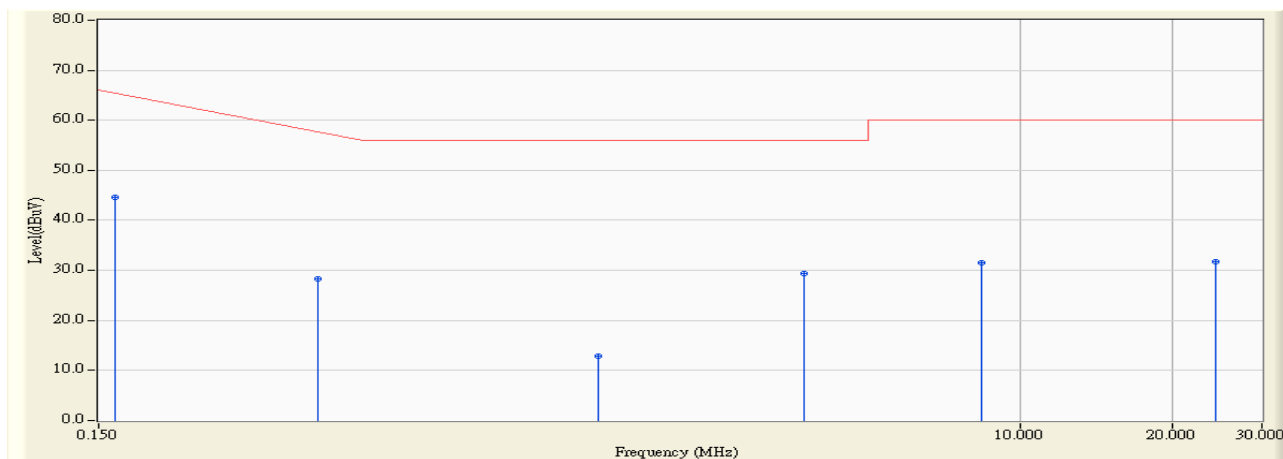
Conducted emissions were invested over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9kHz.

2.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.207: 2006

2.6. Test Result

Site : ShieldingRoom3	Time : 2008/10/01 - 14:35
Limit : CISPR_B_00M_QP	Margin : 0
Probe : SR3_LISN(16A) - Line1	Power : AC 120V/60Hz
EUT : GPS Trip Recorder	Note : Mode 1: Transmit (USB)

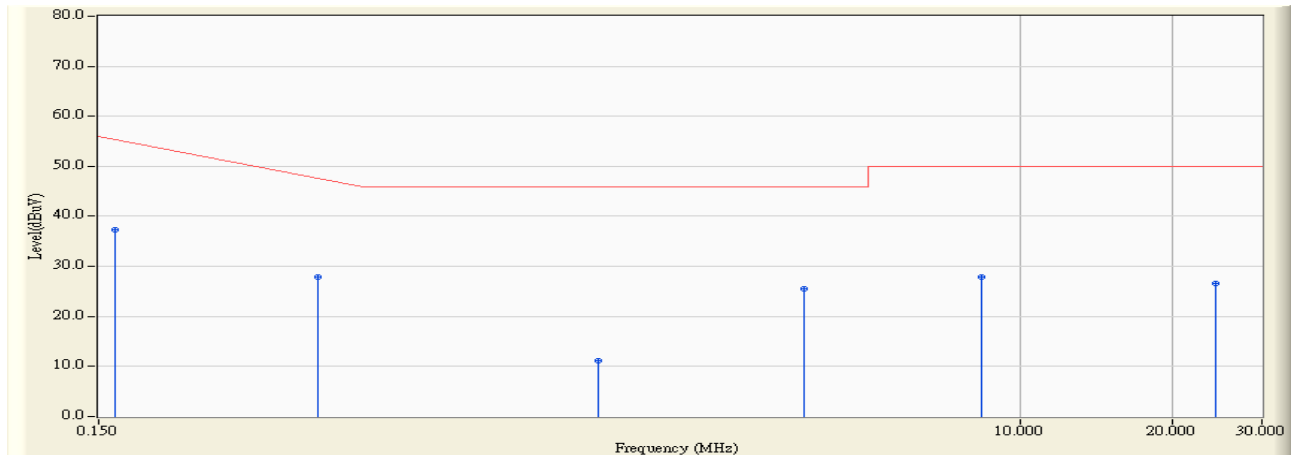


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1	*	0.162	0.076	44.541	44.617	-21.040	65.657	QUASIPeAK
2		0.406	0.216	28.198	28.414	-30.272	58.686	QUASIPeAK
3		1.462	0.265	12.709	12.974	-43.026	56.000	QUASIPeAK
4		3.738	0.310	28.977	29.287	-26.713	56.000	QUASIPeAK
5		8.374	0.575	30.893	31.467	-28.533	60.000	QUASIPeAK
6		24.334	1.183	30.635	31.819	-28.181	60.000	QUASIPeAK

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Site : ShieldingRoom3	Time : 2008/10/01 - 14:35
Limit : CISPR_B_00M_AV	Margin : 0
Probe : SR3_LISN(16A) - Line1	Power : AC 120V/60Hz
EUT : GPS Trip Recorder	Note : Mode 1: Transmit (USB)

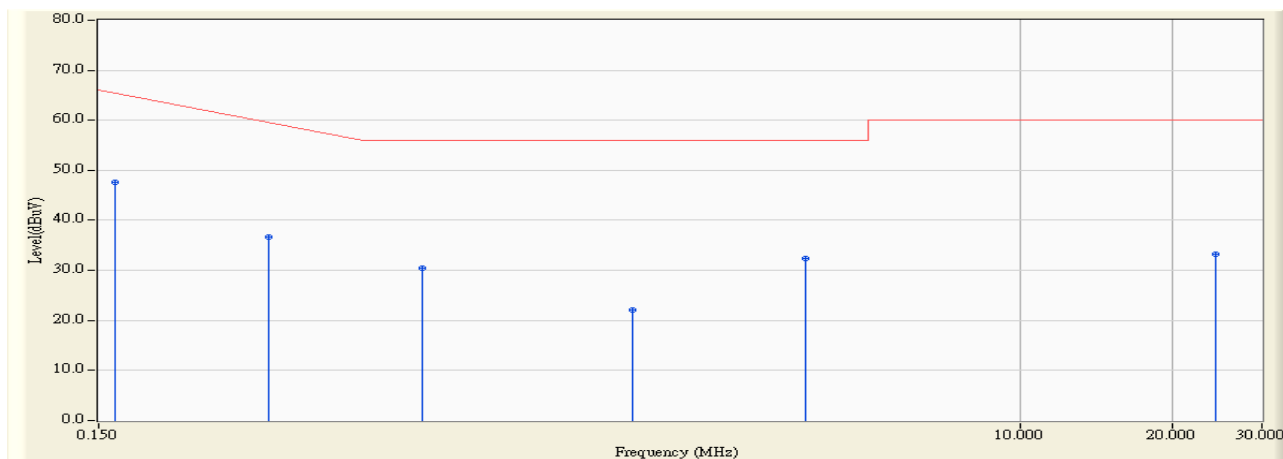


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1	*	0.162	0.076	37.158	37.234	-18.423	55.657	AVERAGE
2		0.406	0.216	27.640	27.856	-20.830	48.686	AVERAGE
3		1.462	0.265	10.857	11.122	-34.878	46.000	AVERAGE
4		3.738	0.310	25.160	25.470	-20.530	46.000	AVERAGE
5		8.374	0.575	27.363	27.938	-22.062	50.000	AVERAGE
6		24.334	1.183	25.311	26.494	-23.506	50.000	AVERAGE

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Site : ShieldingRoom3	Time : 2008/10/01 - 14:39
Limit : CISPR_B_00M_QP	Margin : 0
Probe : SR3_LISN(16A) - Line2	Power : AC 120V/60Hz
EUT : GPS Trip Recorder	Note : Mode 1: Transmit (USB)

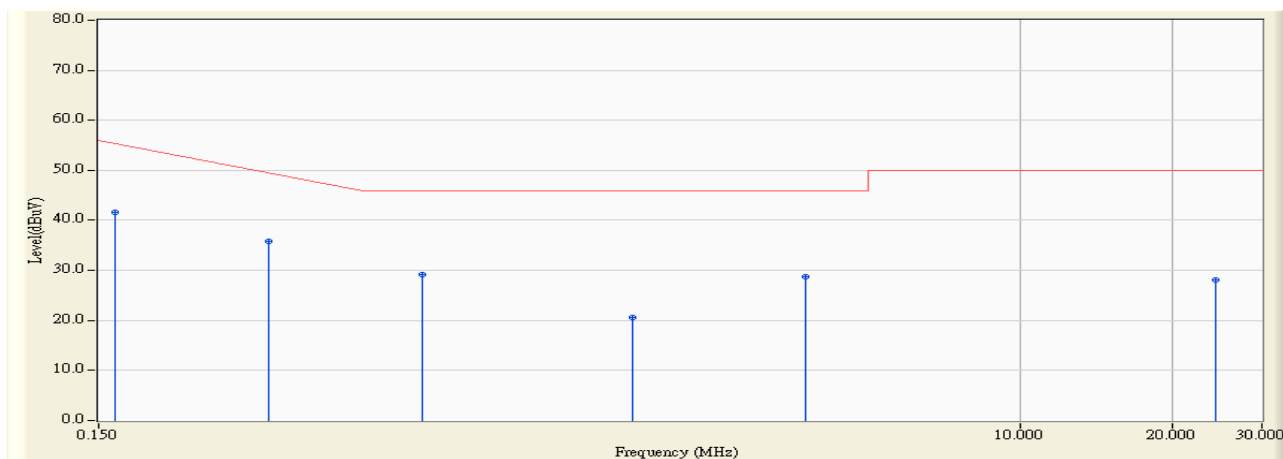


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1	*	0.162	0.076	47.590	47.667	-17.990	65.657	QUASIPeAK
2		0.326	0.180	36.428	36.608	-24.363	60.971	QUASIPeAK
3		0.654	0.277	30.147	30.424	-25.576	56.000	QUASIPeAK
4		1.710	0.297	21.839	22.136	-33.864	56.000	QUASIPeAK
5		3.746	0.350	32.078	32.428	-23.572	56.000	QUASIPeAK
6		24.310	1.302	31.952	33.254	-26.746	60.000	QUASIPeAK

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Site : ShieldingRoom3	Time : 2008/10/01 - 14:39
Limit : CISPR_B_00M_AV	Margin : 0
Probe : SR3_LISN(16A) - Line2	Power : AC 120V/60Hz
EUT : GPS Trip Recorder	Note : Mode 1: Transmit (USB)

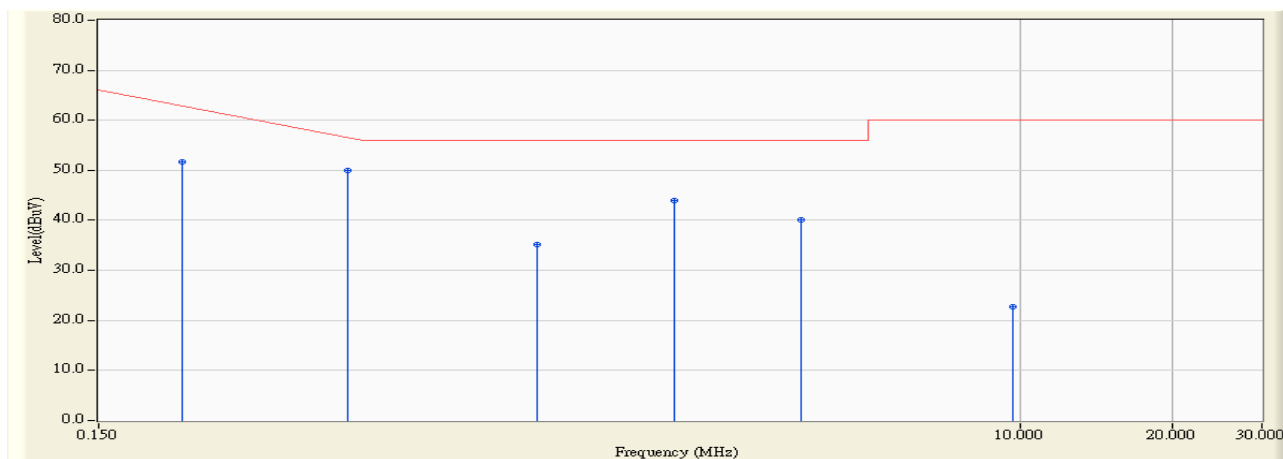


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1	*	0.162	0.076	41.490	41.566	-14.091	55.657	AVERAGE
2		0.326	0.180	35.716	35.896	-15.075	50.971	AVERAGE
3		0.654	0.277	28.818	29.094	-16.906	46.000	AVERAGE
4		1.710	0.297	20.270	20.567	-25.433	46.000	AVERAGE
5		3.746	0.350	28.376	28.726	-17.274	46.000	AVERAGE
6		24.310	1.302	26.750	28.052	-21.948	50.000	AVERAGE

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Site : ShieldingRoom3	Time : 2008/10/21 - 20:13
Limit : CISPR_B_00M_QP	Margin : 0
Probe : QTK-LISN-SR2 - Line1	Power : AC 120V/60Hz
EUT : GPS Trip Recorder	Note : Mode 3: Transmit (Adapter)

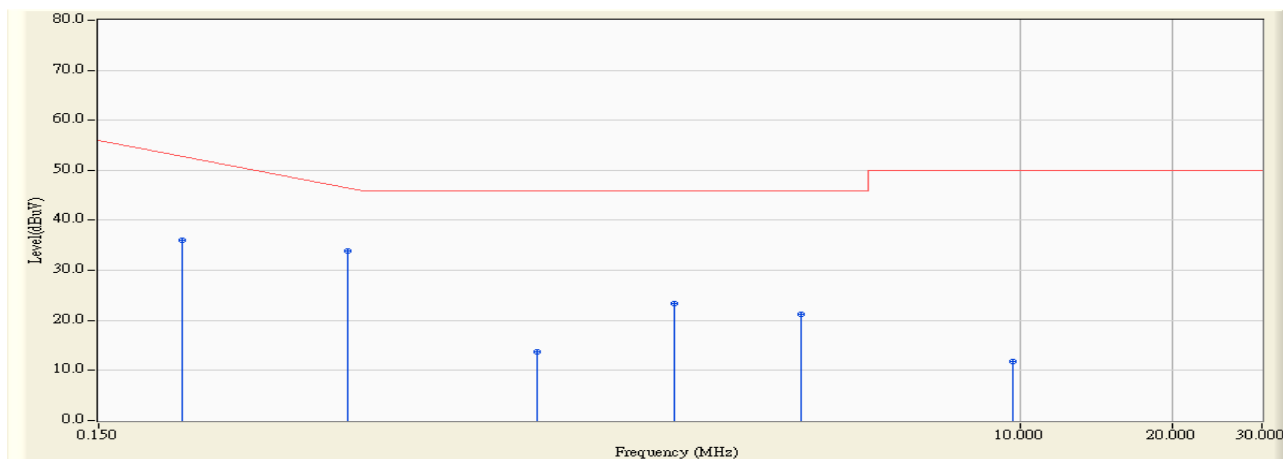


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1		0.220	9.980	41.670	51.650	-12.350	64.000	QUASIPeAK
2	*	0.466	10.130	39.910	50.040	-6.931	56.971	QUASIPeAK
3		1.103	10.170	25.010	35.180	-20.820	56.000	QUASIPeAK
4		2.068	10.190	33.710	43.900	-12.100	56.000	QUASIPeAK
5		3.673	10.246	29.900	40.146	-15.854	56.000	QUASIPeAK
6		9.650	10.704	12.020	22.724	-37.276	60.000	QUASIPeAK

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Site : ShieldingRoom3	Time : 2008/10/21 - 20:13
Limit : CISPR_B_00M_AV	Margin : 0
Probe : QTK-LISN-SR2 - Line1	Power : AC 120V/60Hz
EUT : GPS Trip Recorder	Note : Mode 3: Transmit (Adapter)

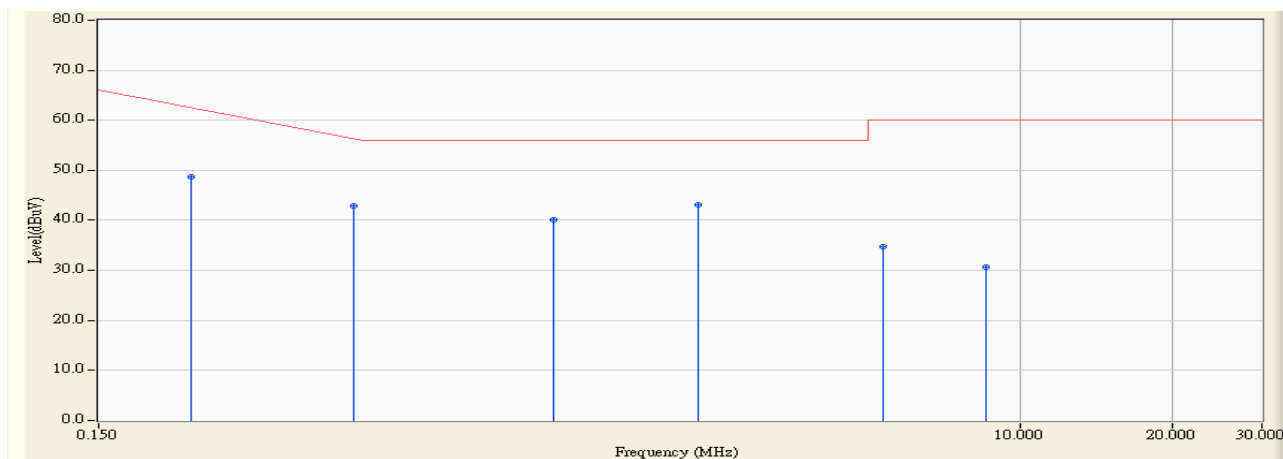


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1		0.220	9.980	26.150	36.130	-17.870	54.000	AVERAGE
2	*	0.466	10.130	23.860	33.990	-12.981	46.971	AVERAGE
3		1.103	10.170	3.460	13.630	-32.370	46.000	AVERAGE
4		2.068	10.190	13.110	23.300	-22.700	46.000	AVERAGE
5		3.673	10.246	10.910	21.156	-24.844	46.000	AVERAGE
6		9.650	10.704	0.990	11.694	-38.306	50.000	AVERAGE

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Site : ShieldingRoom3	Time : 2008/10/21 - 20:19
Limit : CISPR_B_00M_QP	Margin : 0
Probe : QTK-LISN-SR2 - Line2	Power : AC 120V/60Hz
EUT : GPS Trip Recorder	Note : Mode 3: Transmit (Adapter)

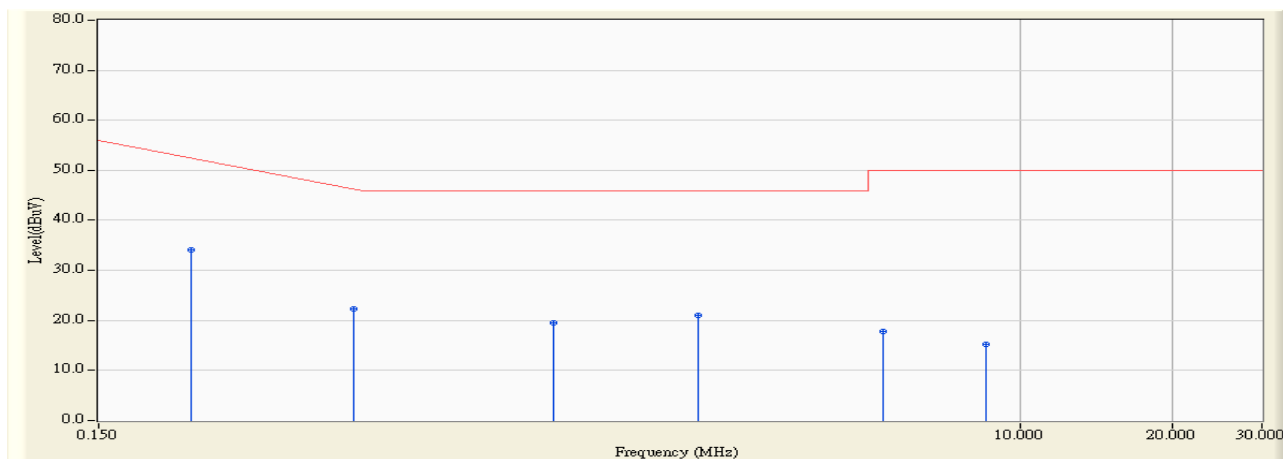


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1		0.228	9.974	38.810	48.784	-14.987	63.771	QUASIPeak
2		0.478	10.127	32.780	42.907	-13.722	56.629	QUASIPeak
3		1.189	10.150	29.880	40.030	-15.970	56.000	QUASIPeak
4	*	2.302	10.181	32.940	43.121	-12.879	56.000	QUASIPeak
5		5.341	10.286	24.530	34.816	-25.184	60.000	QUASIPeak
6		8.541	10.513	20.060	30.573	-29.427	60.000	QUASIPeak

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Site : ShieldingRoom3	Time : 2008/10/21 - 20:19
Limit : CISPR_B_00M_AV	Margin : 0
Probe : QTK-LISN-SR2 - Line2	Power : AC 120V/60Hz
EUT : GPS Trip Recorder	Note : Mode 3: Transmit (Adapter)



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1	*	0.228	9.974	24.190	34.164	-19.607	53.771	AVERAGE
2		0.478	10.127	12.250	22.377	-24.252	46.629	AVERAGE
3		1.189	10.150	9.340	19.490	-26.510	46.000	AVERAGE
4		2.302	10.181	10.890	21.071	-24.929	46.000	AVERAGE
5		5.341	10.286	7.480	17.766	-32.234	50.000	AVERAGE
6		8.541	10.513	4.630	15.143	-34.857	50.000	AVERAGE

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

3. Peak Power Output

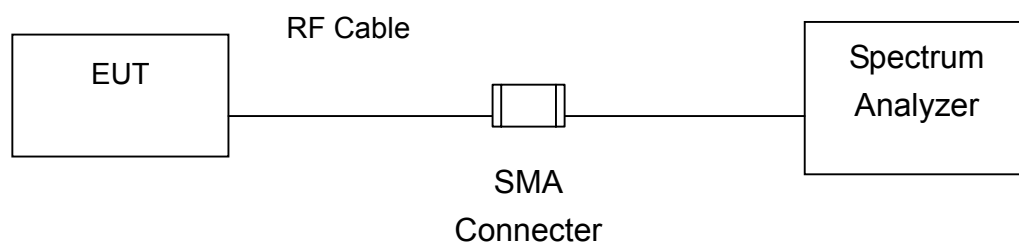
3.1. Test Equipment

The following test equipments are used during the test:

Item	Equipment	Manufacturer	Model No. / Serial No.	Last Cal.
1	Spectrum Analyzer	R&S	FSP/ 100005	Oct., 2007
2	No.1 OATS			Sep., 2008

Note: All equipment upon which need to calibrated are with calibration period of 1 year.

3.2. Test Setup



3.3. Test procedures

The EUT was setup according to ANSI C63.4, 2003 and tested according to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements

3.4. Limits

For frequency hopping systems operating in the 902-928 MHz band: 1 Watt for systems employing at least 50 hopping channels; and, 0.25 Watts for systems employing less than 50 hopping channels.

For frequency hopping systems in the 2400-2483.5 MHz band employing at least 75 hopping channels, and all frequency hopping systems in the 5725-5850 MHz band: 1Watt. For all other frequency hopping systems in the 2400-2483.5 MHz band: 0.125 Watt.

3.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247: 2006

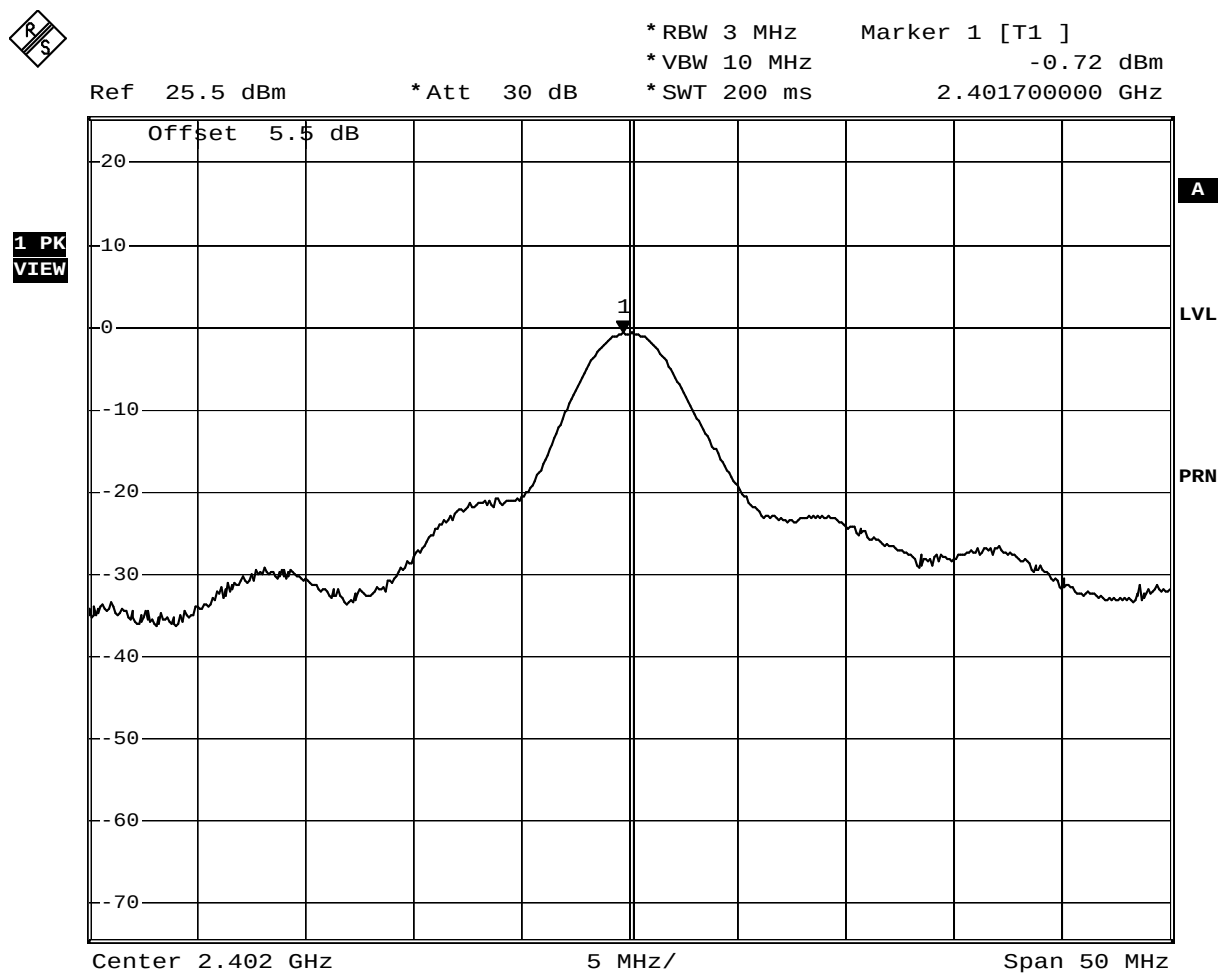
3.6. Test Result

Product	GPS Trip Recorder		
Test Item	Peak Power Output		
Test Mode	Mode 1: Transmit (USB)		
Date of Test	2008/09/30	Test Site	No.1 OATS

1M-GFSK Modulation, PRBS Packet Type

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
00	2402	-0.72	1Watt= 30 dBm	Pass

Channel 00



Date: 30.SEP.2008 11:26:24

Product	GPS Trip Recorder		
Test Item	Peak Power Output		
Test Mode	Mode 1: Transmit		
Date of Test	2008/09/30	Test Site	No.1 OATS

1M-GFSK Modulation, PRBS Packet Type

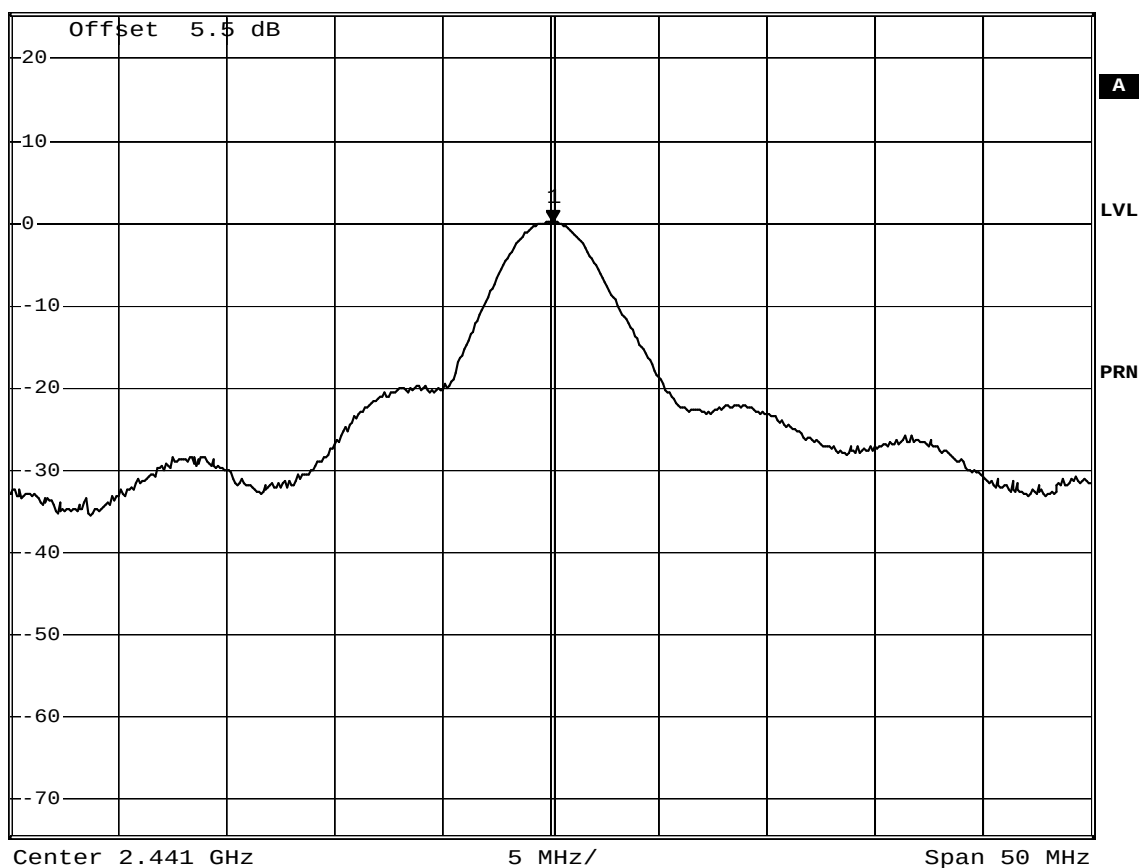
Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
39	2441	0.11	1Watt= 30 dBm	Pass

Channel 39



Ref 25.5 dBm *Att 30 dB *RBW 3 MHz Marker 1 [T1] 0.11 dBm
 *VBW 10 MHz *SWT 200 ms 2.441100000 GHz

1 PK
VIEW



Date: 30.SEP.2008 11:23:16

Product	GPS Trip Recorder		
Test Item	Peak Power Output		
Test Mode	Mode 1: Transmit		
Date of Test	2008/09/30	Test Site	No.1 OATS

1M-GFSK Modulation, PRBS Packet Type

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
78	2480	0.53	1Watt= 30 dBm	Pass

Channel 78

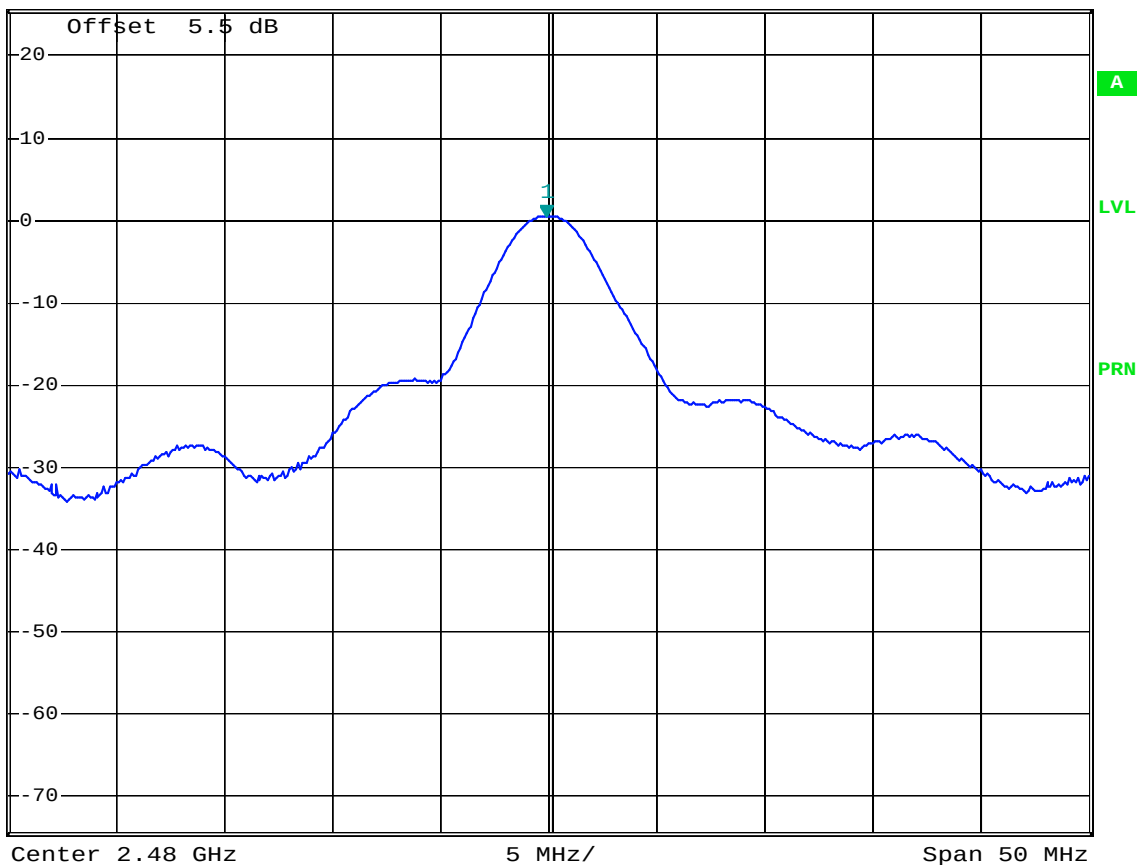


* RBW 3 MHz Marker 1 [T1]
 * VBW 10 MHz 0.53 dBm
 * SWT 200 ms 2.479900000 GHz

Ref 25.5 dBm

* Att 30 dB

1 PK
VIEW



Date: 30.SEP.2008 11:20:44

4. Radiated Emission

4.1. Test Equipment

The following test equipment are used during the test:

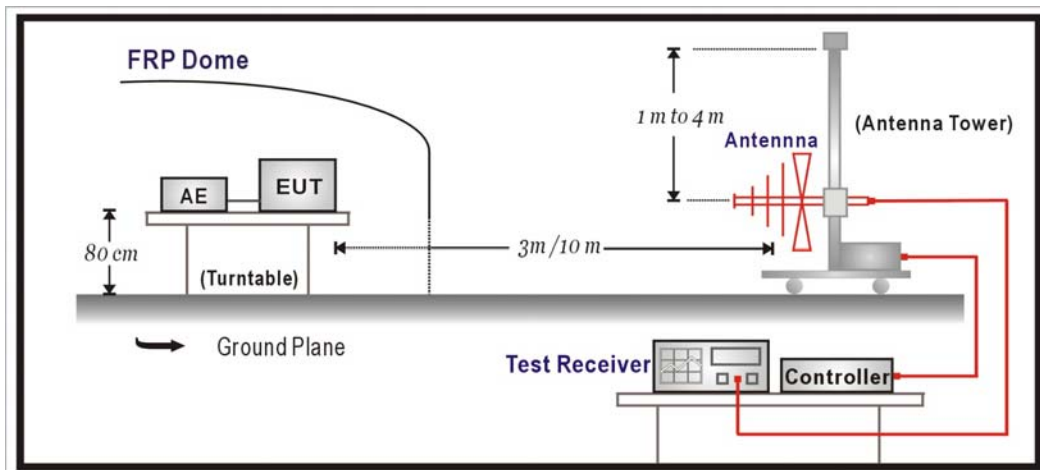
Radiated Emission / Site1

Instrument	Manufacturer	Type No.	Serial No	Cal. Date
Bilog Antenna	Schaffner Chase	CBL6112B	2895	2008/09/03
Horn Antenna	Electro Metrics	EM-6961	103325	2008/03/15
Pre-Amplifier	HP	8449B	3008A01123	2007/11/15
Pre-Amplifier	Quietek	AP-025C	N/A	N/A
Spectrum Analyzer	R & S	FSP40	100005	2008/08/25
Spectrum Analyzer	Advantest	R3162	120300649	2007/11/24
Test Receiver	R & S	ESCS 30	825442/017	2008/02/13

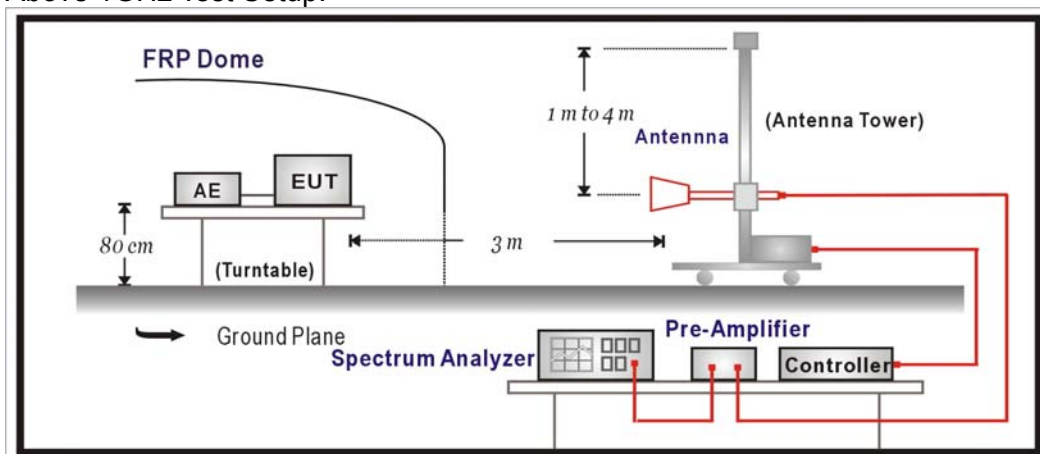
Note: 1. All equipments that need to calibrate are with calibration period of 1 year.
2. "N/A" Ca1.Date is used to Pre-test, not final test.

4.2. Test Setup

Under 1GHz Test Setup:



Above 1GHz Test Setup:



4.3. Limits

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 20dB below the level of the fundamental or to the general radiated emission limits in paragraph 15.209, whichever is the lesser attenuation.

FCC Part 15 Subpart C Paragraph 15.209 Limits		
Frequency MHz	uV/m	dBuV/m
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

Remarks : 1. RF Voltage (dBuV) = 20 log RF Voltage (uV)
 2. In the Above Table, the tighter limit applies at the band edges.
 3. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

4.4. Test Procedure

The EUT was setup according to ANSI C63.4, 2003 and tested according to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements.

The EUT and its simulators are placed on a turn table which is 0.8 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.

Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.4:2003 on radiated measurement.

On any frequency or frequencies below or equal to 1000 MHz, the limits shown are based on measuring equipment employing a quasi-peak detector function and on any frequency or frequencies above 1000 MHz the radiated limits shown are based upon the use of measurement instrumentation employing an average detector function. When average radiated emission measurement are included emission measurement below 1000 MHz, there also is a limit on the radio frequency emissions, as measured using instrumentation with a peak detector function, corresponding to 20 dB above the maximum permitted average limit. The bandwidth below 1GHz setting on the field strength meter is 120 kHz and above 1GHz is 1MHz.

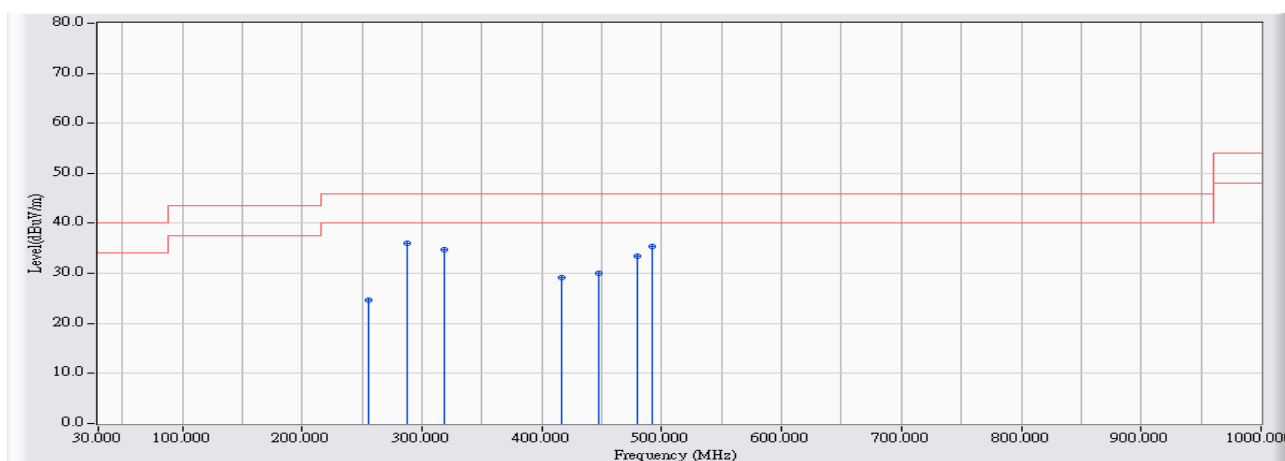
4.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247: 2006

4.6. Test Result

30MHz-1GHz Spurious

Site : Site1	Time : 2008/10/02 - 21:29
Limit : FCC_CLASS_B_03M_QP	Margin : 6
Probe : CB3_FCC_30-1G(2008-9) - HORIZONTAL	Power : AC 120V/60Hz
EUT : GPS Trip Recorder	Note : Mode 1: Transmit (USB)

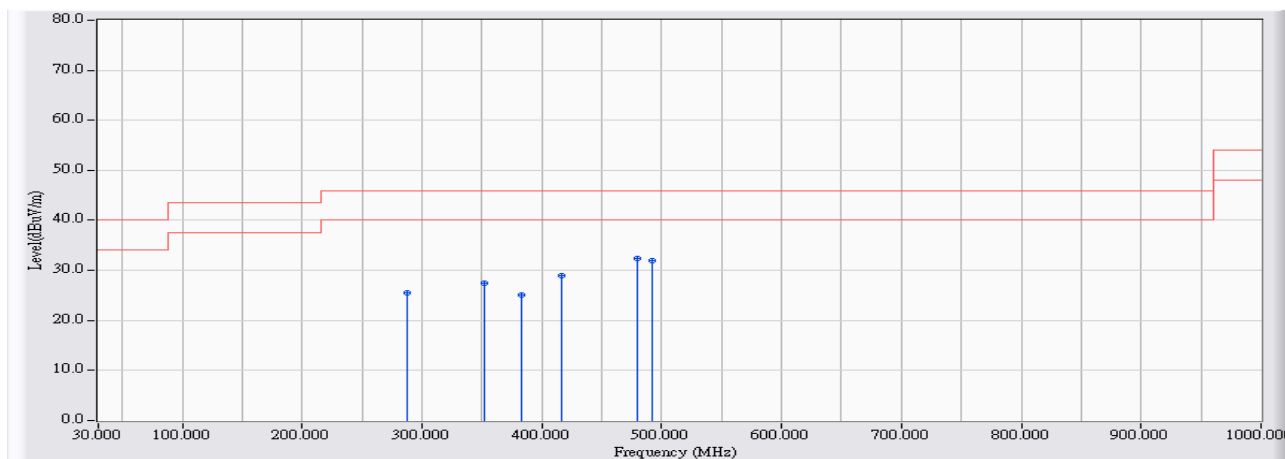


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		255.040	-11.994	36.745	24.751	-21.249	46.000	QUASIPeAK
2	*	288.020	-10.642	46.712	36.070	-9.930	46.000	QUASIPeAK
3		319.060	-10.076	44.806	34.730	-11.270	46.000	QUASIPeAK
4		416.060	-3.958	33.197	29.239	-16.761	46.000	QUASIPeAK
5		447.100	-5.918	36.002	30.084	-15.916	46.000	QUASIPeAK
6		480.080	-7.633	41.153	33.520	-12.480	46.000	QUASIPeAK
7		491.720	-6.823	42.300	35.477	-10.523	46.000	QUASIPeAK

Note:

1. All Reading Levels are Quasi-Peak value.
2. “ * ”, means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Site : Site1	Time : 2008/10/02 – 21:30
Limit : FCC_CLASS_B_03M_QP	Margin : 6
Probe : CB3_FCC_30-1G(2008-9) - VERTICAL	Power : AC 120V/60Hz
EUT : GPS Trip Recorder	Note : Mode 1: Transmit (USB)

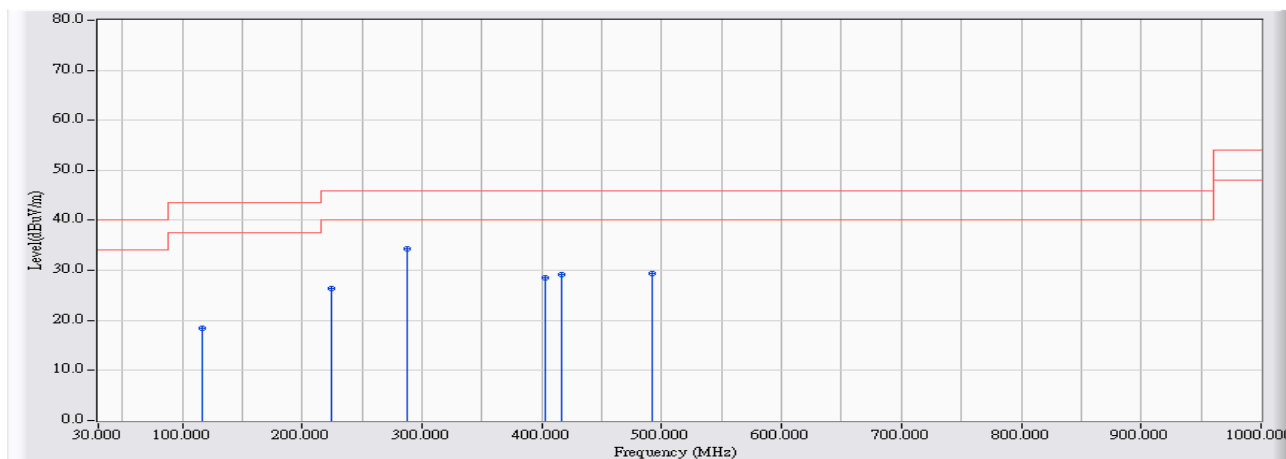


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		288.020	-12.627	38.214	25.587	-20.413	46.000	QUASIPeAK
2		352.040	-12.401	39.805	27.404	-18.596	46.000	QUASIPeAK
3		383.080	-9.189	34.207	25.018	-20.982	46.000	QUASIPeAK
4		416.060	-4.071	33.024	28.953	-17.047	46.000	QUASIPeAK
5	*	480.080	-4.134	36.503	32.369	-13.631	46.000	QUASIPeAK
6		491.720	-5.048	36.974	31.926	-14.074	46.000	QUASIPeAK

Note:

1. All Reading Levels are Quasi-Peak value.
2. “ * ”, means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Site : Site1	Time : 2008/10/02 – 21:30
Limit : FCC_CLASS_B_03M_QP	Margin : 6
Probe : CB3_FCC_30-1G(2008-9) - HORIZONTAL	Power : DC 12V
EUT : GPS Trip Recorder	Note : Mode 2: Transmit (Car Charger)

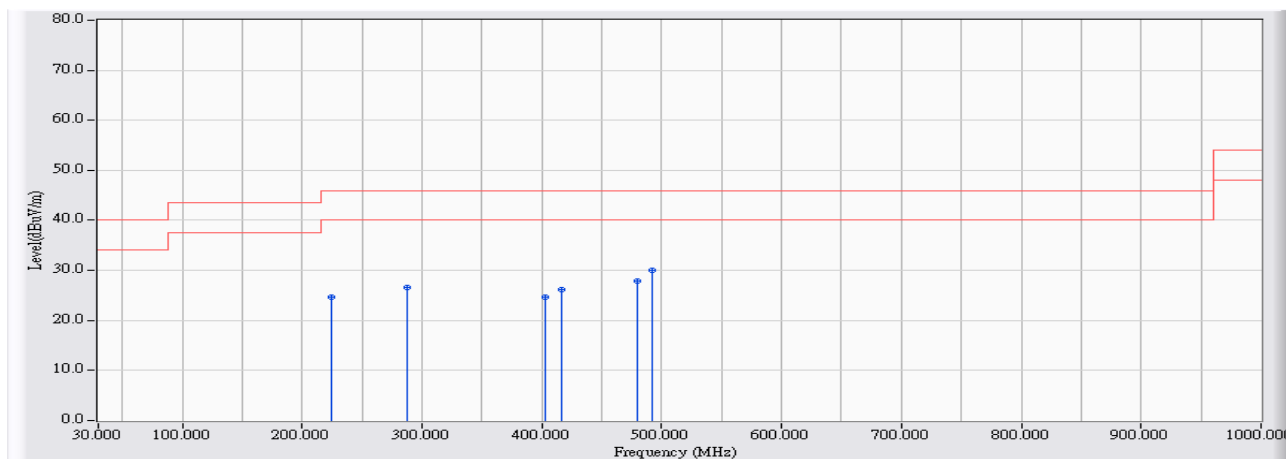


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		117.300	-14.389	32.767	18.378	-25.122	43.500	QUASIPeAK
2		224.000	-13.154	39.594	26.440	-19.560	46.000	QUASIPeAK
3	*	288.020	-10.642	44.940	34.298	-11.702	46.000	QUASIPeAK
4		402.480	-6.085	34.659	28.575	-17.425	46.000	QUASIPeAK
5		416.060	-3.958	33.105	29.147	-16.853	46.000	QUASIPeAK
6		491.720	-6.823	36.146	29.323	-16.677	46.000	QUASIPeAK

Note:

1. All Reading Levels are Quasi-Peak value.
2. “ * ”, means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Site : Site1	Time : 2008/10/02 – 21:31
Limit : FCC_CLASS_B_03M_QP	Margin : 6
Probe : CB3_FCC_30-1G(2008-9) - VERTICAL	Power : DC 12V
EUT : GPS Trip Recorder	Note : Mode 2: Transmit (Car Charger)

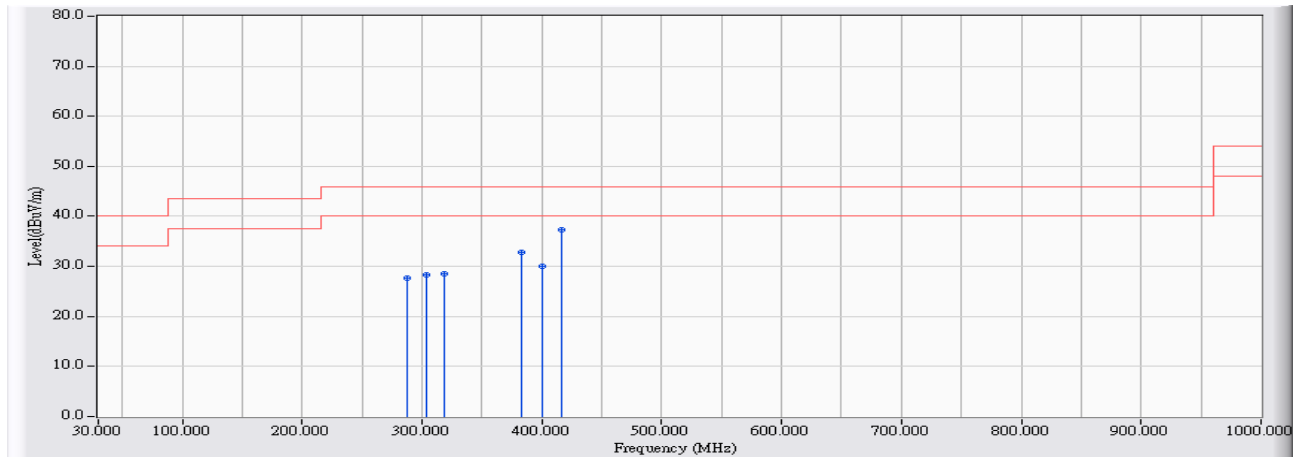


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		224.000	-12.106	36.852	24.746	-21.254	46.000	QUASIPeAK
2		288.020	-12.627	39.241	26.614	-19.386	46.000	QUASIPeAK
3		402.480	-6.088	30.829	24.742	-21.258	46.000	QUASIPeAK
4		416.060	-4.071	30.170	26.099	-19.901	46.000	QUASIPeAK
5		480.080	-4.134	31.949	27.815	-18.185	46.000	QUASIPeAK
6	*	491.720	-5.048	35.092	30.044	-15.956	46.000	QUASIPeAK

Note:

1. All Reading Levels are Quasi-Peak value.
2. “ * ”, means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Site : Site1	Time : 2008/10/22 - 15:14
Limit : FCC_CLASS_B_03M_QP	Margin : 6
Probe : CB3_FCC_30-1G(2008-9) - HORIZONTAL	Power : AC 120V/60Hz
EUT : I-BLUE747A+ I-BLUE737A+	Note : Mode 3: Transmit (Adapter)

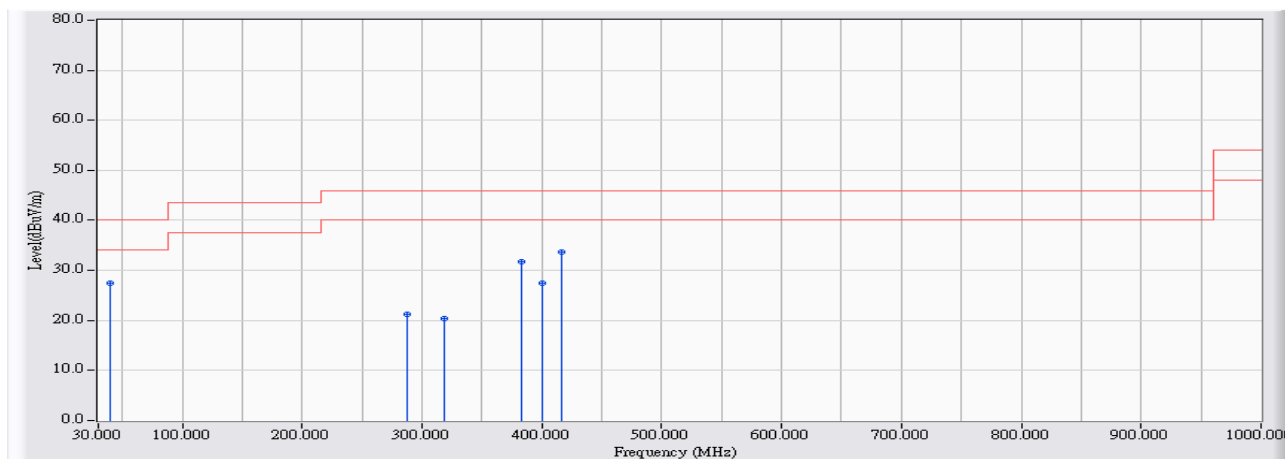


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		288.020	-10.642	38.395	27.753	-18.247	46.000	QUASIPeAK
2		303.540	-7.753	36.155	28.402	-17.598	46.000	QUASIPeAK
3		319.060	-10.076	38.690	28.614	-17.386	46.000	QUASIPeAK
4		383.080	-9.674	42.430	32.756	-13.244	46.000	QUASIPeAK
5		400.540	-6.401	36.493	30.092	-15.908	46.000	QUASIPeAK
6	*	416.060	-3.958	41.197	37.239	-8.761	46.000	QUASIPeAK

Note:

1. All Reading Levels are Quasi-Peak value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Site : Site1	Time : 2008/10/22 - 15:15
Limit : FCC_CLASS_B_03M_QP	Margin : 6
Probe : CB3_FCC_30-1G(2008-9) - VERTICAL	Power : AC 120V/60Hz
EUT : I-BLUE747A+ I-BLUE737A+	Note : Mode 3: Transmit (Adapter)



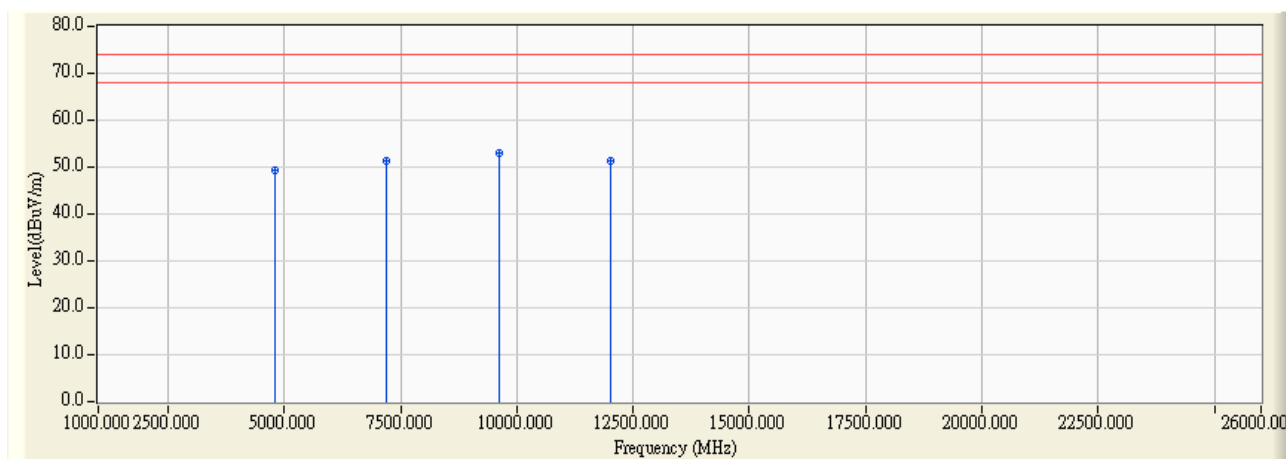
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		39.700	-8.212	35.637	27.426	-12.574	40.000	QUASIPeAK
2		288.020	-12.627	33.932	21.305	-24.695	46.000	QUASIPeAK
3		319.060	-12.721	33.006	20.285	-25.715	46.000	QUASIPeAK
4		383.080	-9.189	40.974	31.785	-14.215	46.000	QUASIPeAK
5		400.540	-6.351	33.705	27.353	-18.647	46.000	QUASIPeAK
6	*	416.060	-4.071	37.747	33.676	-12.324	46.000	QUASIPeAK

Note:

1. All Reading Levels are Quasi-Peak value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Harmonic & Spurious:

Site : Site1	Time : 2008/09/26 - 10:20
Limit : FCC_B_(Above_1G)_3M_PK	Margin : 6
Probe : CB4_FCC_1-26G(2008-05) - HORIZONTAL	Power : AC 120V/60Hz
EUT : GPS Trip Recorder	Note : TX-2402MHz

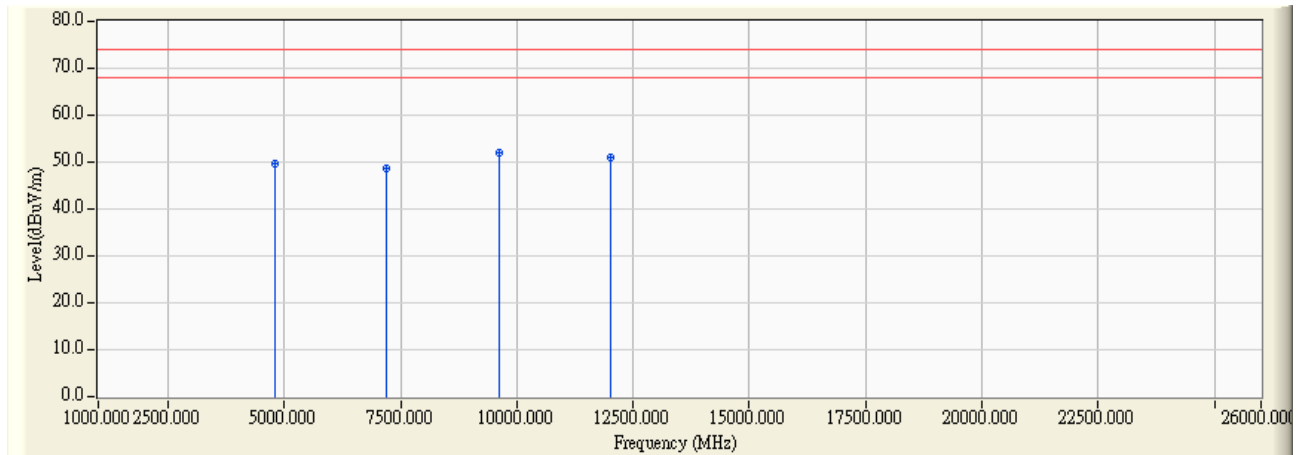


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		4803.960	3.053	46.220	49.273	-24.727	74.000	PEAK
2		7206.000	6.950	44.250	51.200	-22.800	74.000	PEAK
3	*	9607.920	14.963	37.970	52.934	-21.066	74.000	PEAK
4		12010.000	16.678	34.490	51.168	-22.832	74.000	PEAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. “ * ”, means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Site : Site1	Time : 2008/09/26 - 10:20
Limit : FCC_B_(Above_1G)_3M_PK	Margin : 6
Probe : CB4_FCC_1-26G(2008-05) - VERTICAL	Power : AC 120V/60Hz
EUT : GPS Trip Recorder	Note : TX-2402MHz

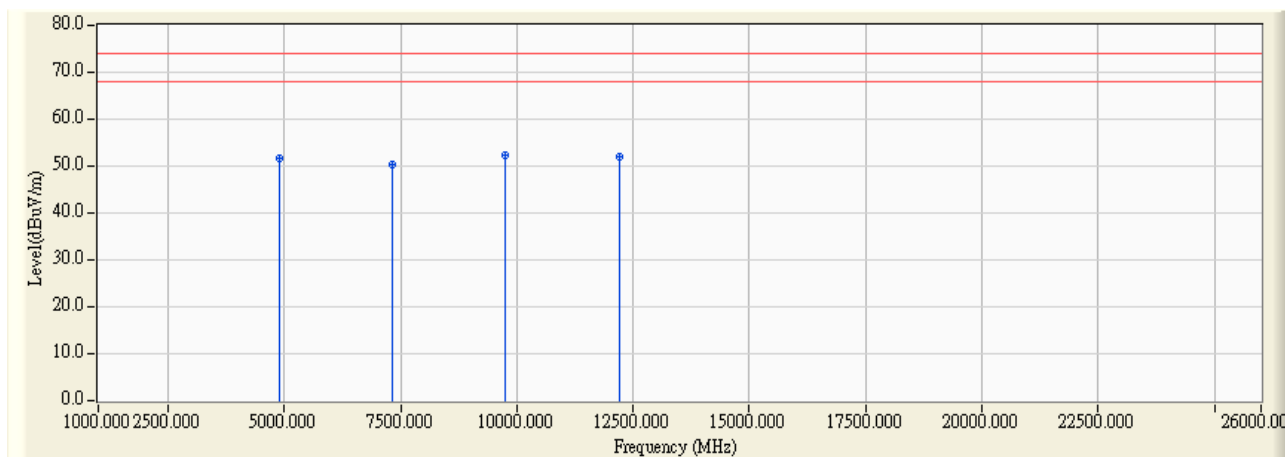


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		4803.950	3.053	46.680	49.733	-24.267	74.000	PEAK
2		7206.000	7.362	41.250	48.612	-25.388	74.000	PEAK
3	*	9607.920	13.749	38.180	51.930	-22.070	74.000	PEAK
4	*	12010.020	16.658	34.290	50.948	-23.052	74.000	PEAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Site : Site1	Time : 2008/09/26 - 10:20
Limit : FCC_B_(Above_1G)_3M_PK	Margin : 6
Probe : CB4_FCC_1-26G(2008-05) - HORIZONTAL	Power : AC 120V/60Hz
EUT : GPS Trip Recorder	Note : TX-2441MHz

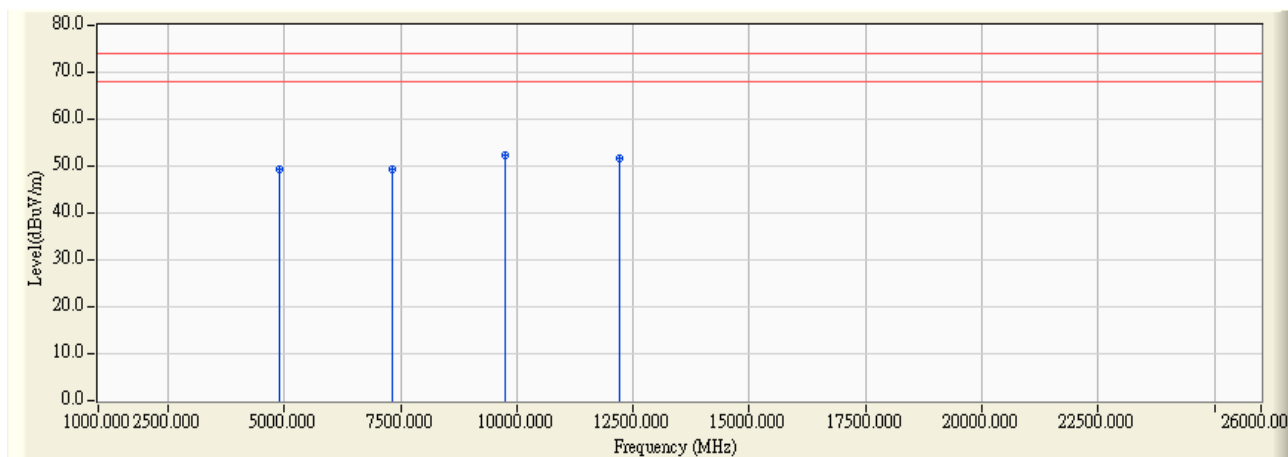


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		4882.000	3.305	48.200	51.505	-22.495	74.000	PEAK
2		7323.020	7.022	43.230	50.252	-23.748	74.000	PEAK
3	*	9764.020	15.492	36.910	52.402	-21.598	74.000	PEAK
4		12204.960	17.263	34.700	51.964	-22.036	74.000	PEAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Site : Site1	Time : 2008/09/26 - 10:21
Limit : FCC_B_(Above_1G)_3M_PK	Margin : 6
Probe : CB4_FCC_1-26G(2008-05) - VERTICAL	Power : AC 120V/60Hz
EUT : GPS Trip Recorder	Note : TX-2441MHz

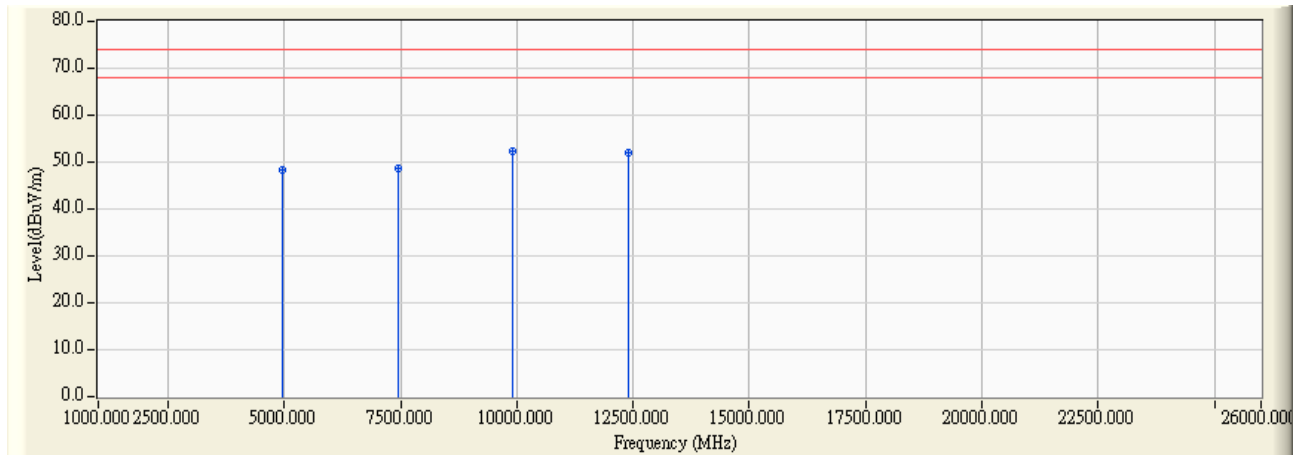


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		4882.000	3.305	45.970	49.275	-24.725	74.000	PEAK
2		7323.020	7.669	41.810	49.479	-24.521	74.000	PEAK
3	*	9764.020	13.966	38.270	52.236	-21.764	74.000	PEAK
4	*	12204.960	16.850	34.760	51.611	-22.389	74.000	PEAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Site : Site1	Time : 2008/09/26 - 10:21
Limit : FCC_B_(Above_1G)_3M_PK	Margin : 6
Probe : CB4_FCC_1-26G(2008-05) - HORIZONTAL	Power : AC 120V/60Hz
EUT : GPS Trip Recorder	Note : TX-2480MHz

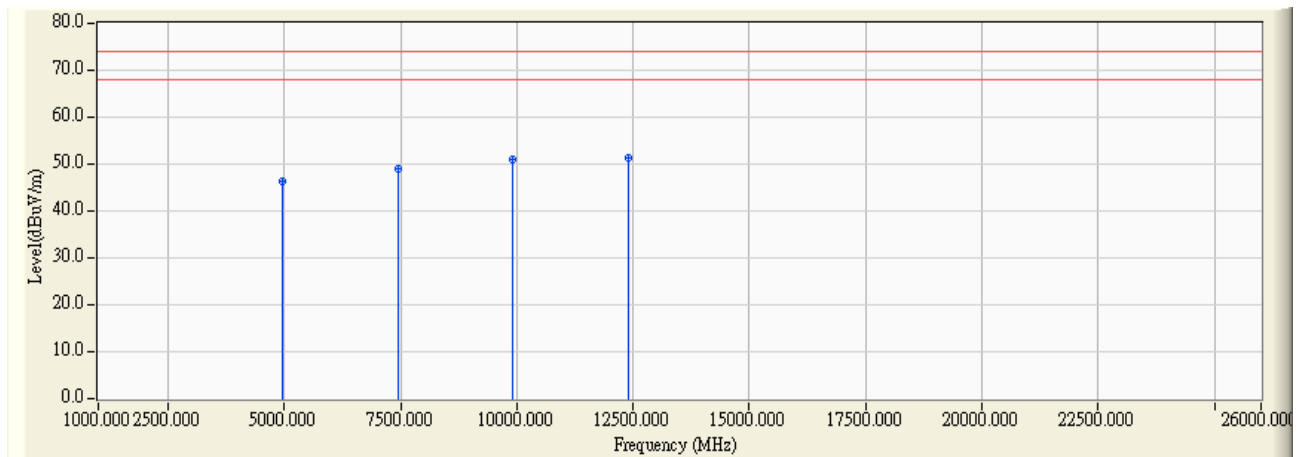


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		4960.000	3.547	44.820	48.367	-25.633	74.000	PEAK
2		7439.900	7.121	41.460	48.581	-25.419	74.000	PEAK
3	*	9920.200	16.025	36.340	52.365	-21.635	74.000	PEAK
4	*	12400.200	17.861	33.990	51.851	-22.149	74.000	PEAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Site : Site1	Time : 2008/09/26 - 10:21
Limit : FCC_B_(Above_1G)_3M_PK	Margin : 6
Probe : CB4_FCC_1-26G(2008-05) - VERTICAL	Power : AC 120V/60Hz
EUT : GPS Trip Recorder	Note : TX-2480MHz



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		4960.000	3.547	42.920	46.467	-27.533	74.000	PEAK
2		7439.900	8.004	41.060	49.064	-24.936	74.000	PEAK
3		9920.200	14.184	36.930	51.114	-22.886	74.000	PEAK
4	*	12400.200	17.063	34.240	51.303	-22.697	74.000	PEAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

5. RF antenna conducted test

5.1. Test Equipment

The following test equipments are used during the test:

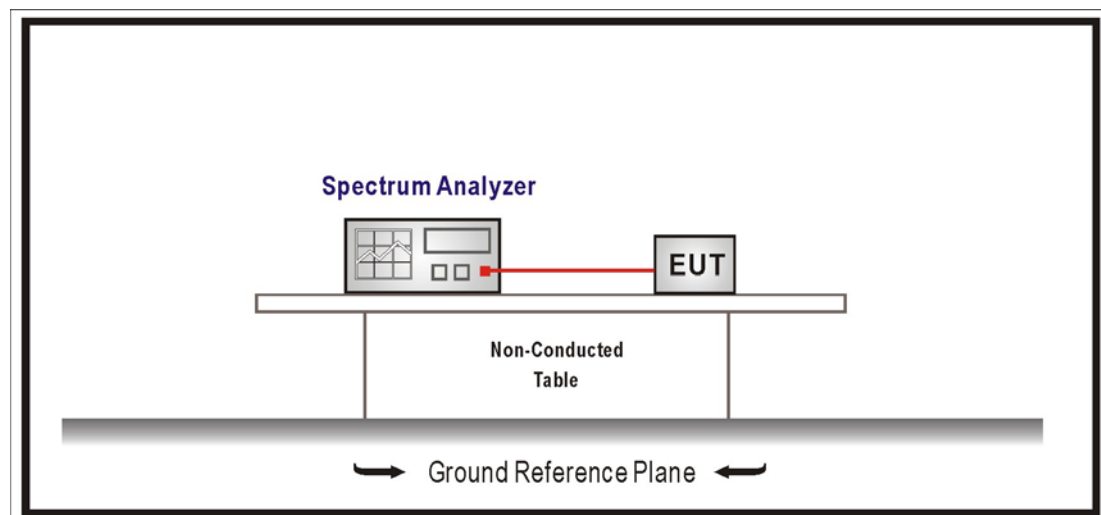
RF Conducted Measurement:				
Item	Equipment	Manufacturer	Model No. / Serial No.	Last Cal.
1	Spectrum Analyzer	R & S	FSP / 100561	Jan., 2008
2	No.1 OATS			Sep., 2008

Note: 1. All equipments that need to calibrate are with calibration period of 1 year.

2. Mark "X" test instruments are used to measure the final test results.

5.2. Test Setup

RF Conducted Measurement:



5.3. Limits

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on an RF conducted or radiated measurement. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

5.4. Test Procedure

The EUT was tested according to DTS test procedure of Oct 2002 KDB558074 for compliance to FCC 47CFR 15.247 requirements.

Set RBW = 100 kHz, Set VBW > RBW, scan up through 10th harmonic.

5.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247: 2006

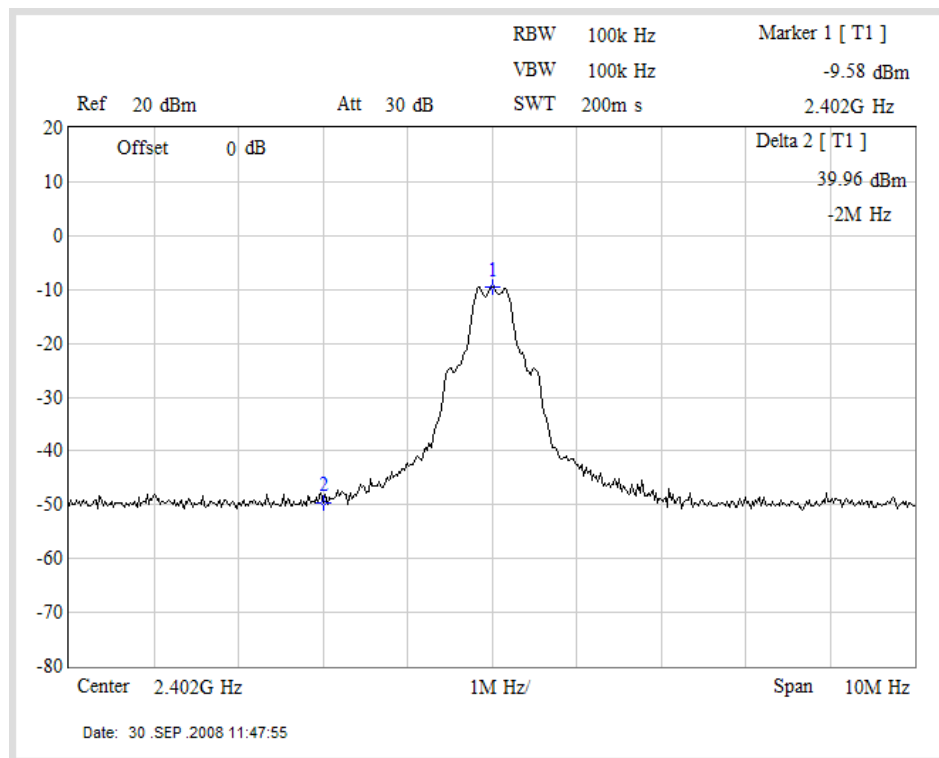
5.6. Test Result

Product	GPS Trip Recorder		
Test Item	RF antenna conducted test		
Test Mode	Mode 1: Transmit		
Date of Test	2008/09/30	Test Site	No.1 OATS

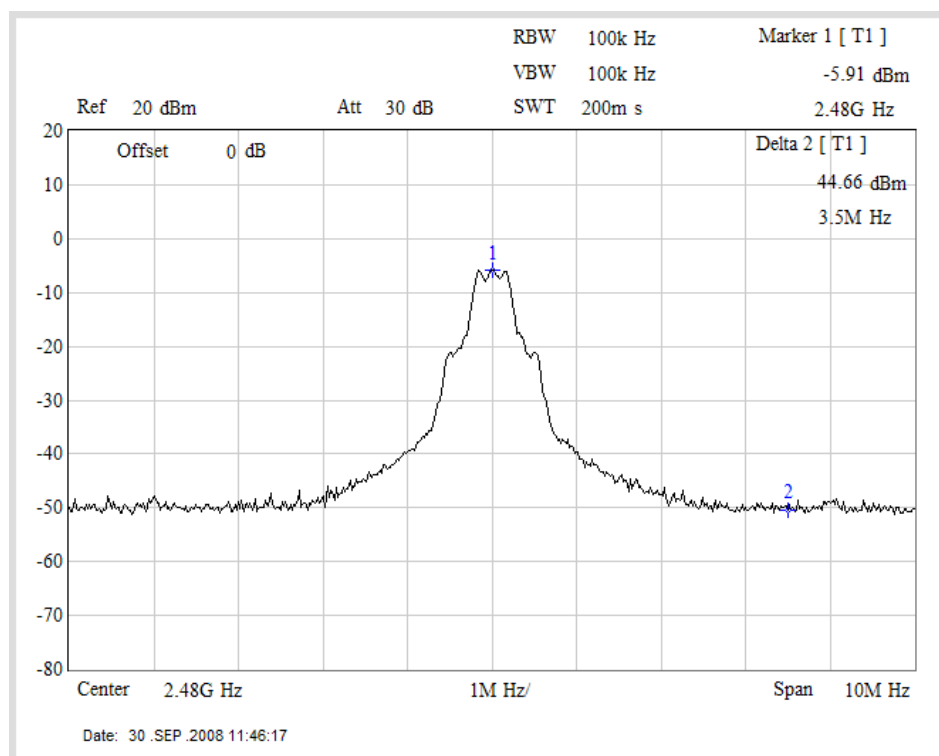
Channel No.	Frequency (MHz)	Measurement Level (dB)	Required Limit (dBc)	Result
00	2402	41.00	≥ 20	Pass
78	2480	44.66	≥ 20	Pass

Figure Channel 1:

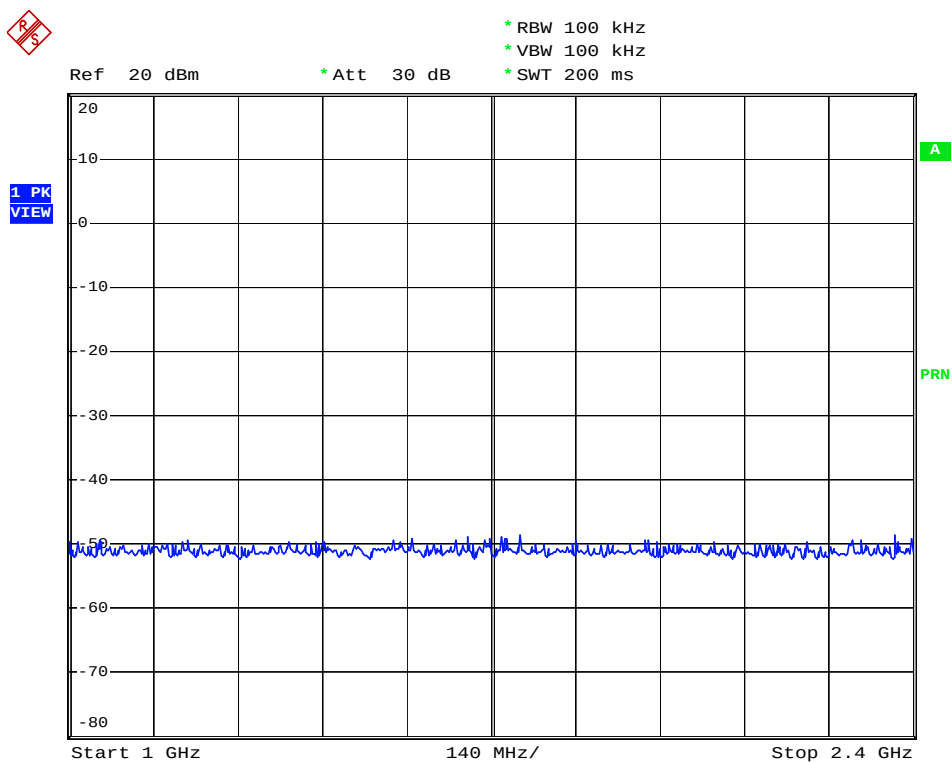
Channel 00



Channel 78

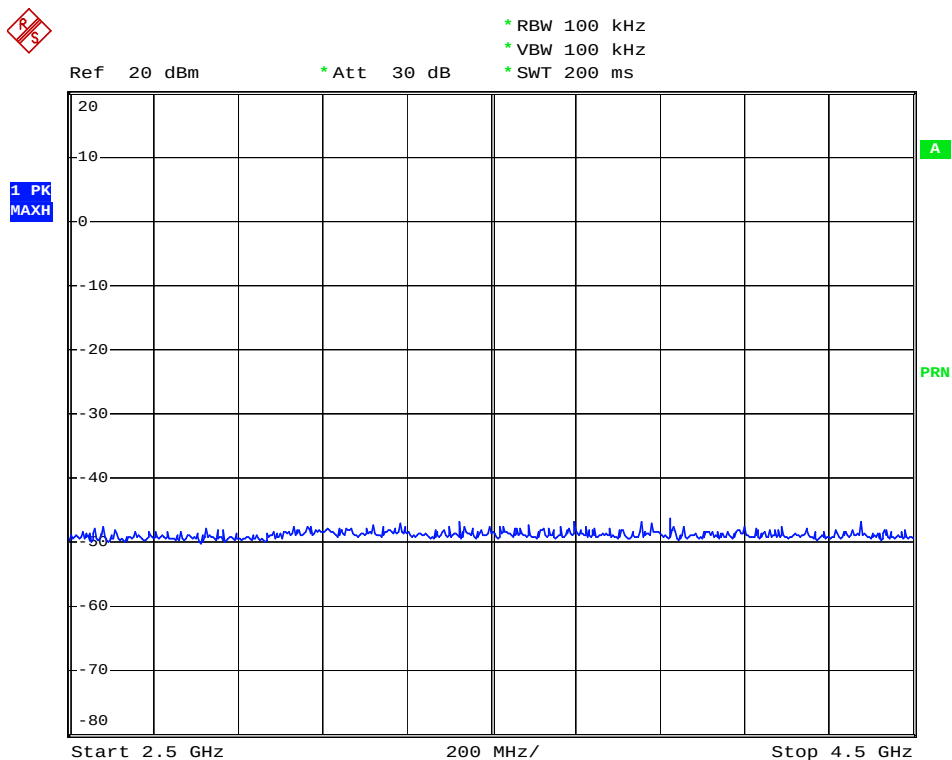


CH00- (1GHz-2.4GHz)



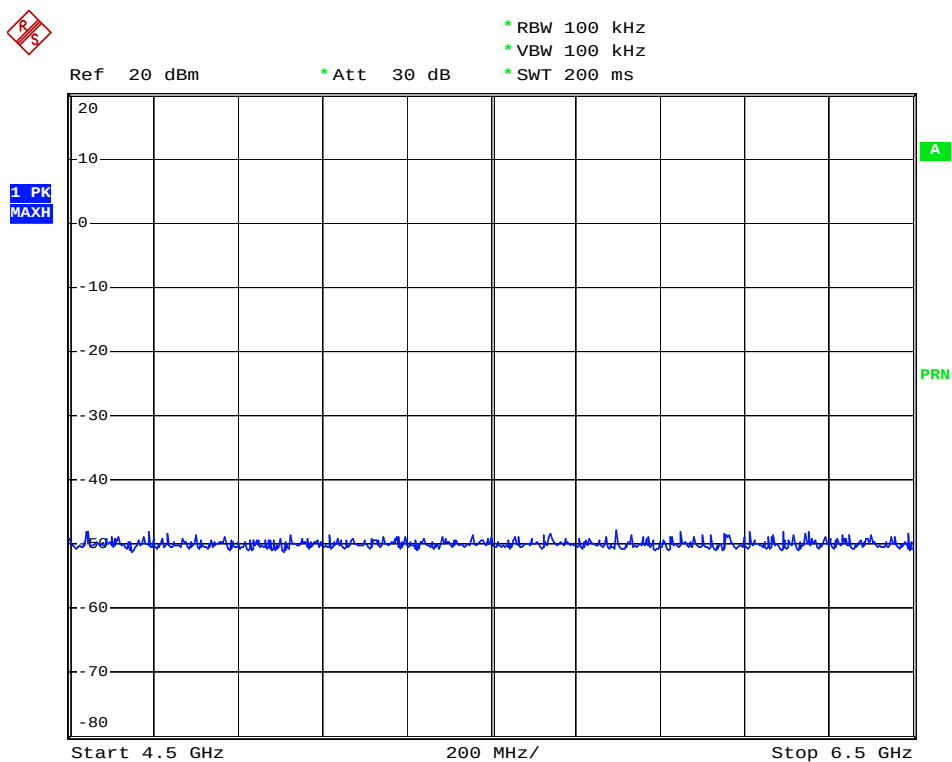
Date: 30.SEP.2008 11:56:09

CH78- (2.5GHz~4.5GHz)



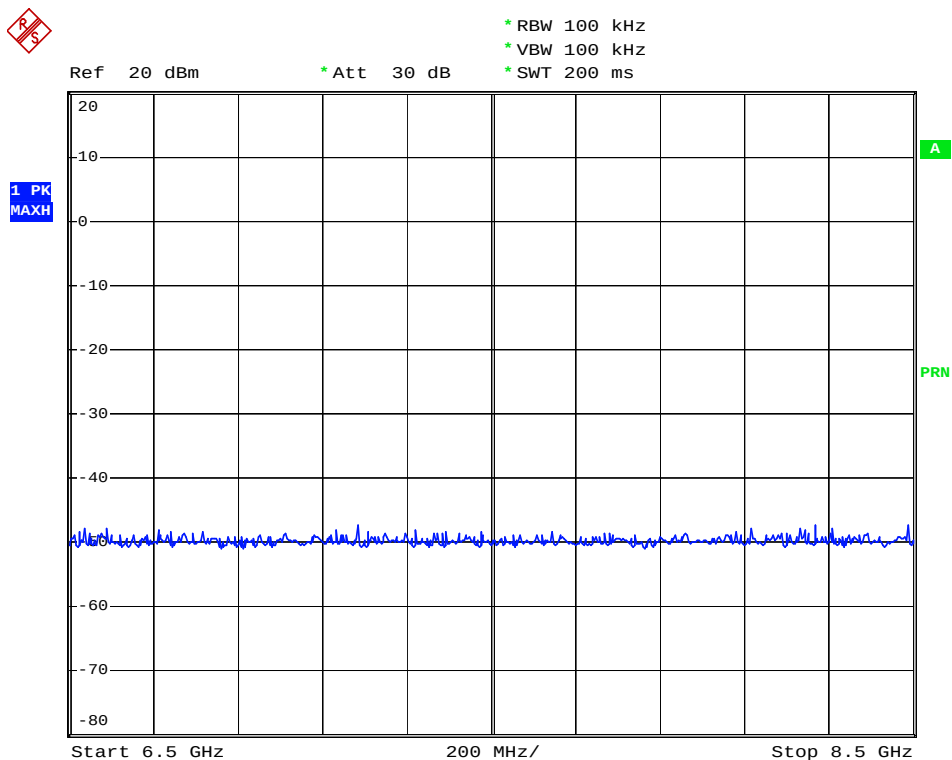
Date: 30.SEP.2008 11:59:30

CH78- (4.5GHz~6.5GHz)



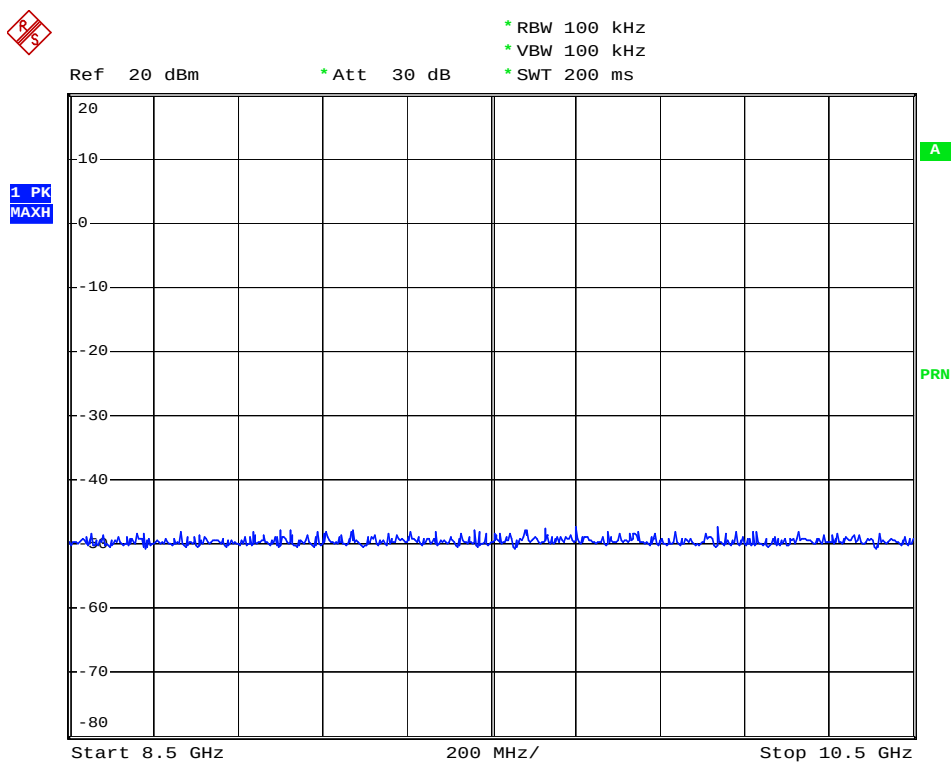
Date: 30.SEP.2008 12:02:40

CH78- (6.5GHz~8.5GHz)



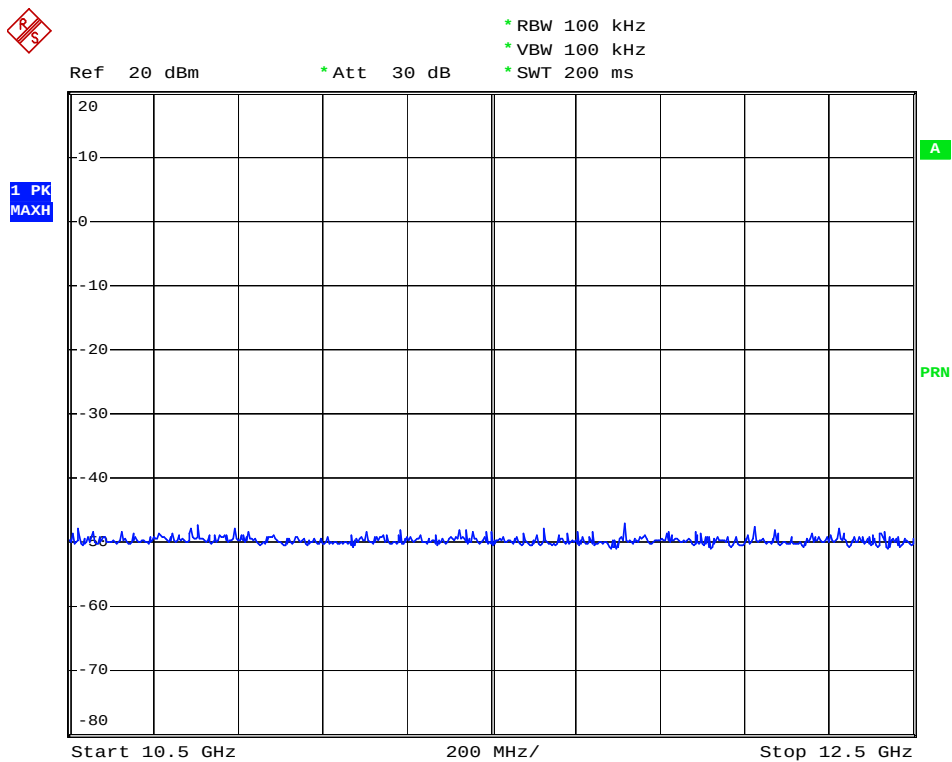
Date: 30.SEP.2008 12:03:17

CH78- (8.5GHz~10.5GHz)



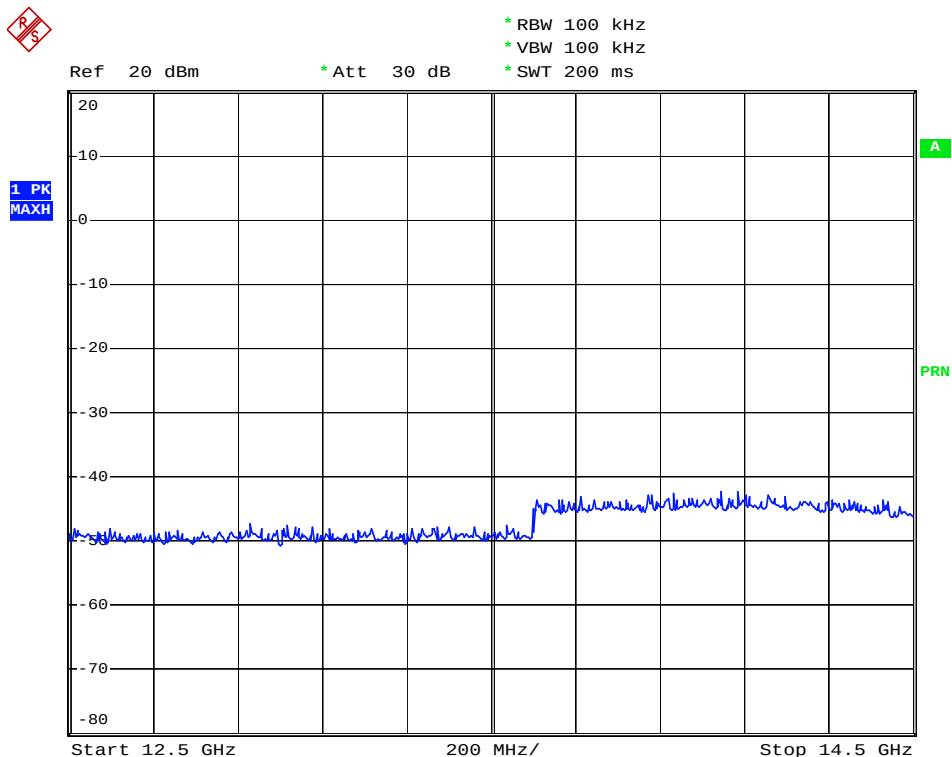
Date: 30.SEP.2008 12:03:57

CH78- (10.5GHz~12.5GHz)



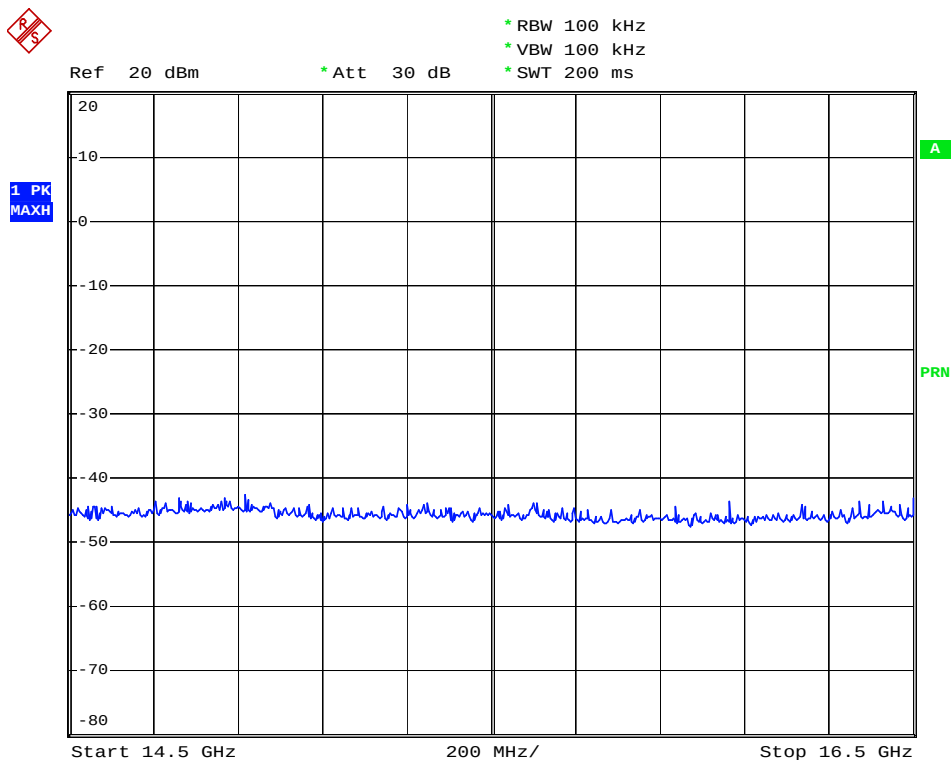
Date: 30.SEP.2008 12:04:54

CH78- (12.5GHz~14.5GHz)



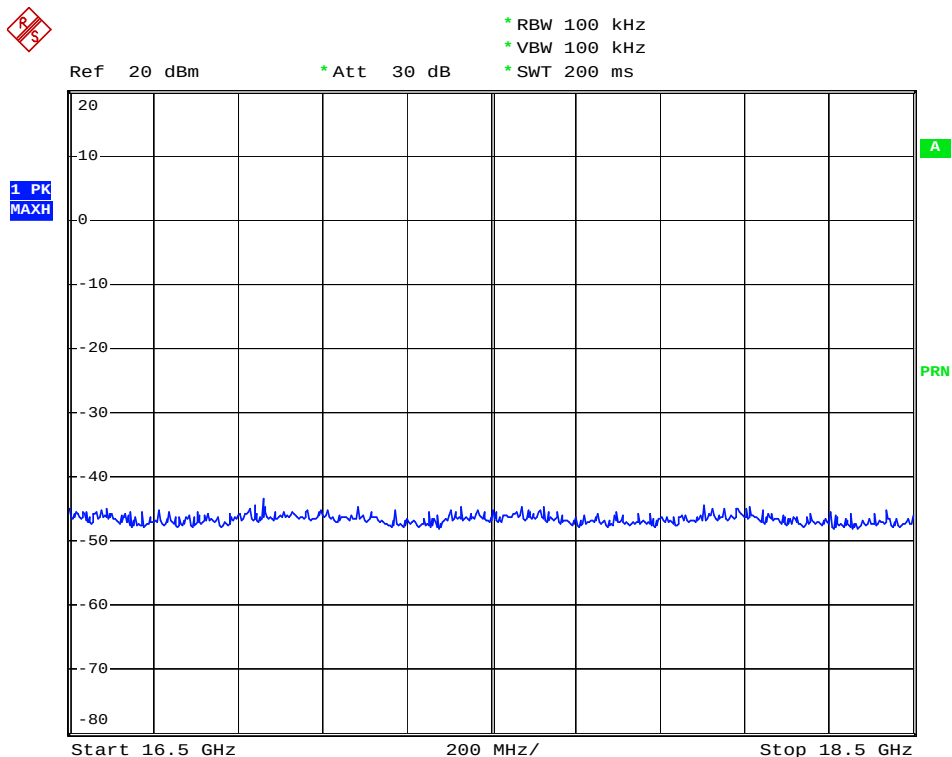
Date: 30.SEP.2008 12:05:29

CH78- (14.5GHz~16.5GHz)



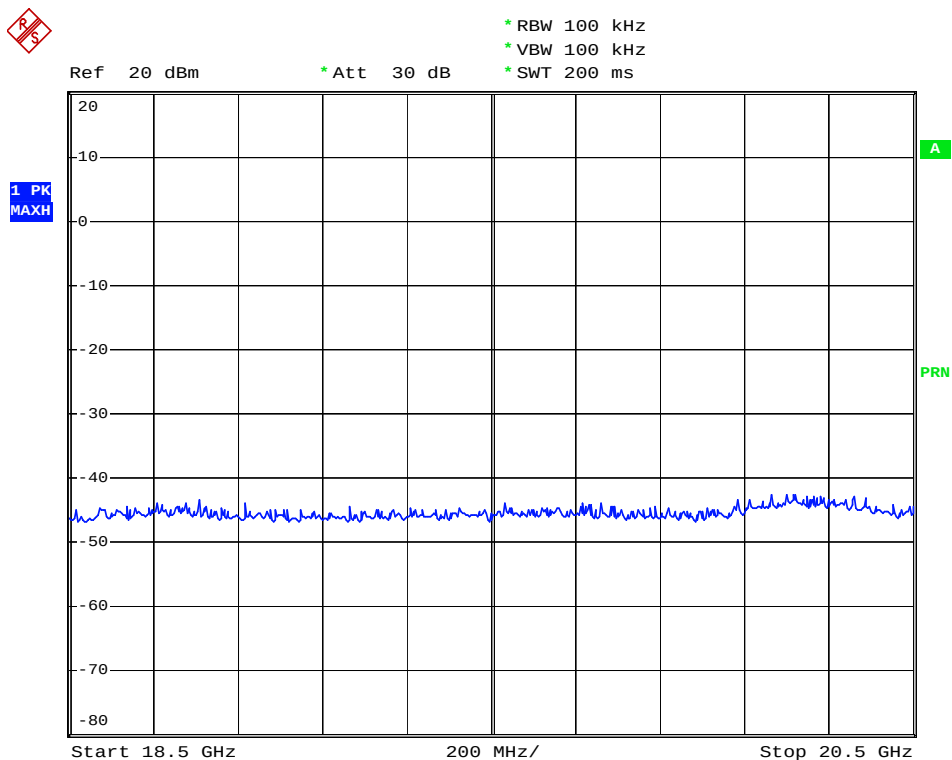
Date: 30.SEP.2008 12:06:06

CH78- (16.5GHz~18.5GHz)



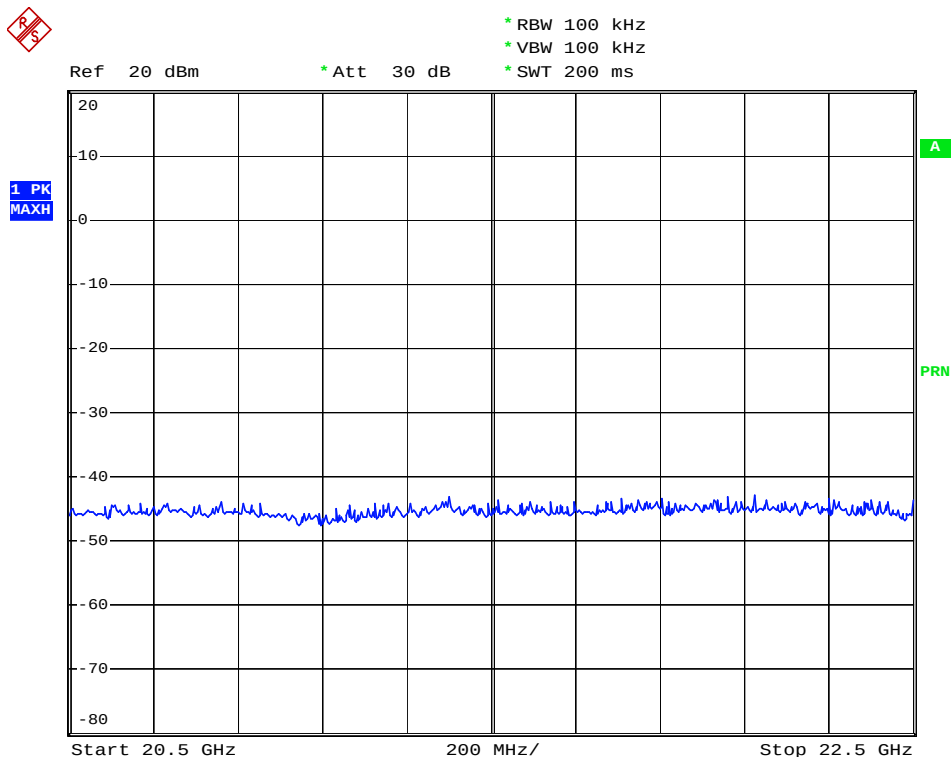
Date: 30.SEP.2008 12:06:44

CH78- (18.5GHz~20.5GHz)



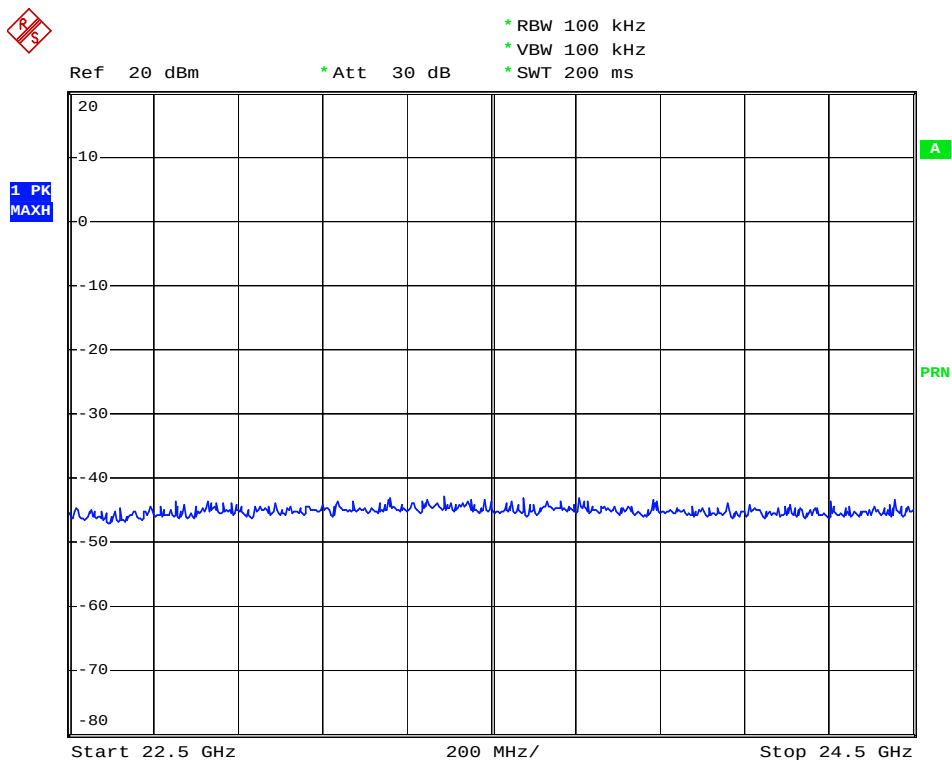
Date: 30.SEP.2008 13:18:47

CH78- (20.5GHz~22.5GHz)



Date: 30.SEP.2008 13:19:43

CH78-(22.5GHz~24.5GHz)



Date: 30.SEP.2008 13:20:43

CH78-(24.5GHz~26.5GHz)

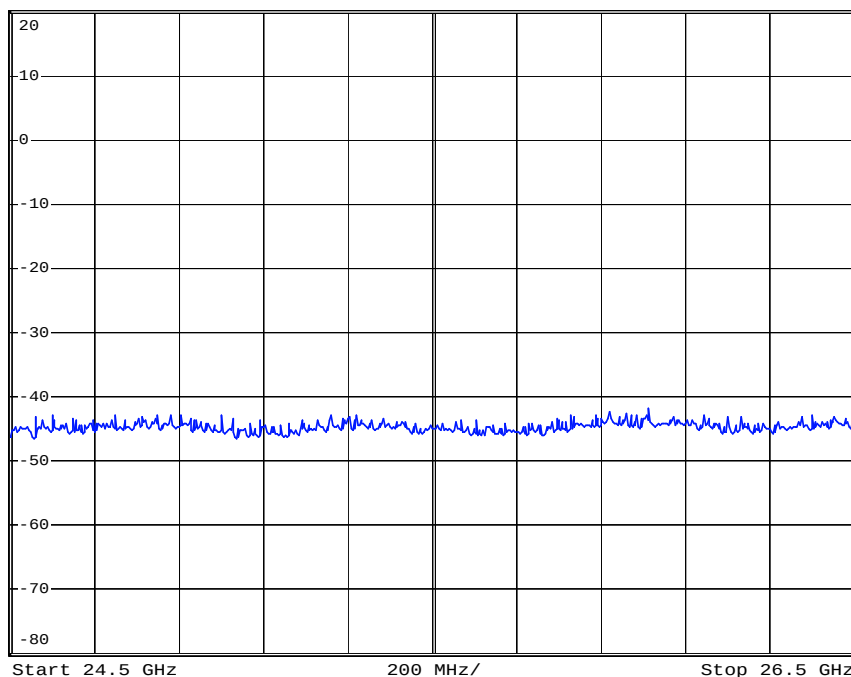


* RBW 100 kHz
* VBW 100 kHz
* SWT 200 ms

Ref 20 dBm

* Att 30 dB

1 PK
MAXH



Date: 30.SEP.2008 13:21:21

6. Band Edge

6.1. Test Equipment

The following test equipments are used during the test:

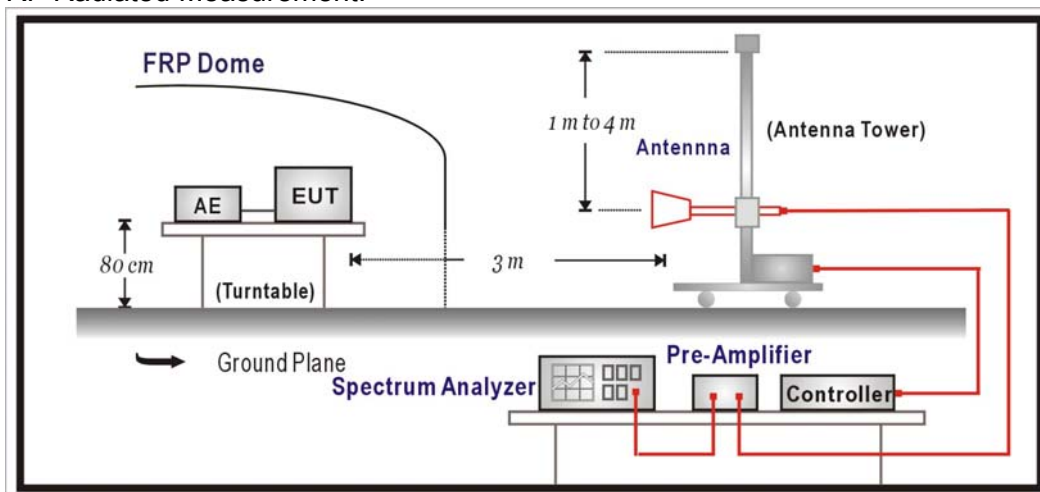
RF Radiated Measurement:					
Item	Equipment		Manufacturer	Model No. / Serial No.	Last Cal.
1	X	Spectrum Analyzer	R & S	FSP40 / 100005	Aug., 2008
2	X	Pre-Amplifier	HP	8449B / 3008A01123	Feb., 2008
3		Loop Antenna	R & S	HFH2-Z2 / 833799/004	Sep., 2008
4		BiconiLog Antenna	Schwarzbeck	VULB 9166 / 1061	Sep., 2008
5		Bilog Antenna	Chase	CBL6112B / 2455	Sep., 2008
6	X	Horn Antenna	Schwarzbeck	BBHA 9120D / BBHA9120D312	Sep., 2008
7	No.1 OATS				Sep., 2008

Note: 1. All equipments that need to calibrate are with calibration period of 1 year.

2. Mark "X" test instruments are used to measure the final test results.

6.2. Test Setup

RF Radiated Measurement:



6.3. Limits

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 20dB below the level of the fundamental or to the general radiated emission limits in paragraph 15.209, whichever is the lesser attenuation.

6.4. Test Procedure

The EUT was setup according to ANSI C63.4, 2003 and tested according to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements

The EUT and its simulators are placed on a turn table which is 0.8 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.

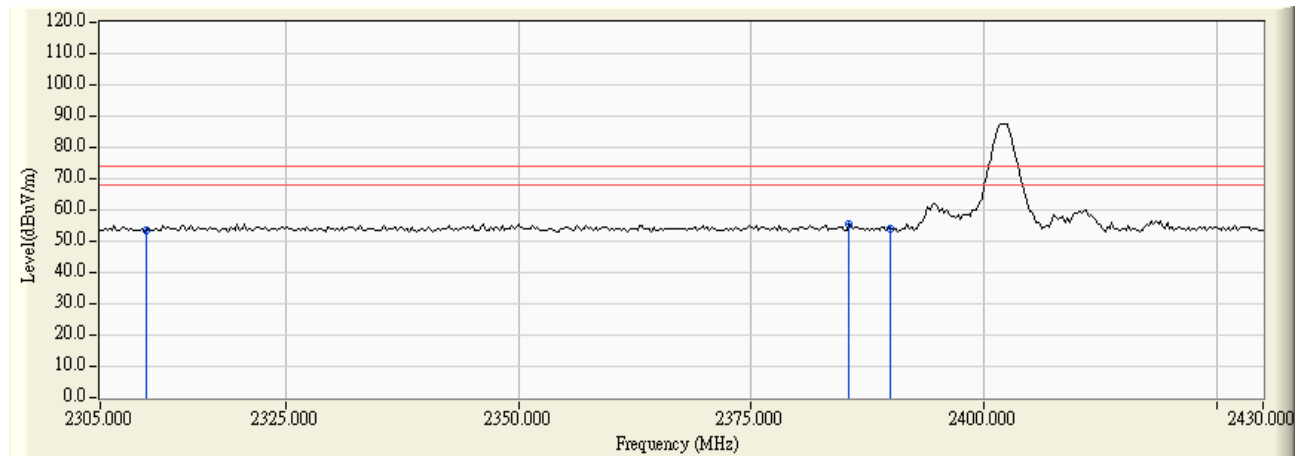
Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.4:2003 on radiated measurement.

6.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247: 2006

6.6. Test Result

Site : Site1	Time : 2008/10/02 - 10:53
Limit : FCC_15.209(961011)_03M_PK	Margin : 6
Probe : CB4_FCC_1-18G(2008-05) - HORIZONTAL	Power : AC 120V/60Hz
EUT : GPS Trip Recorder	Note : TX-2402

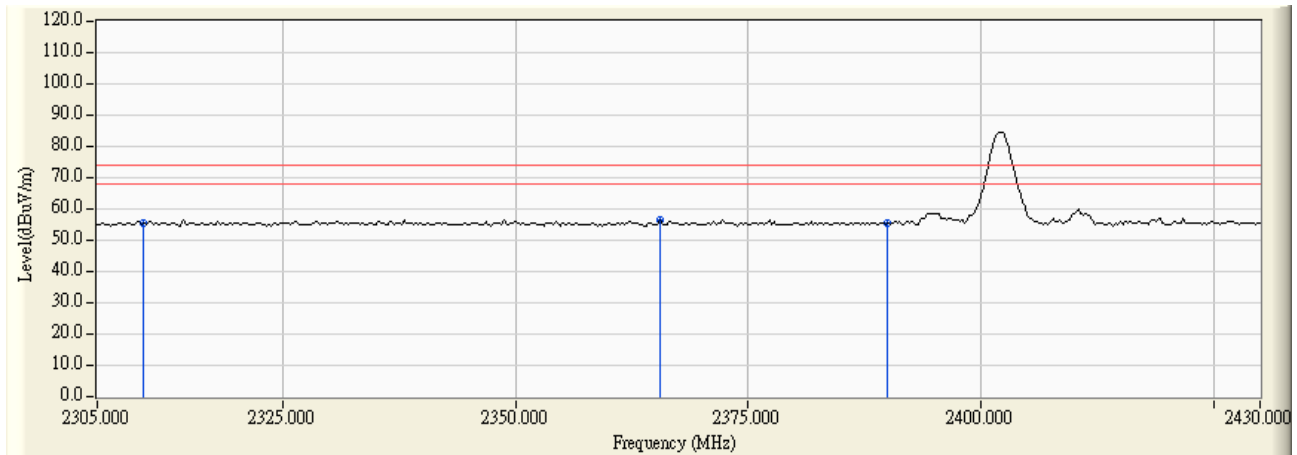


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2310.000	30.823	22.849	53.671	-20.329	74.000	PEAK
2	*	2385.500	31.072	24.319	55.391	-18.609	74.000	PEAK
3		2390.000	31.087	22.855	53.942	-20.058	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Site : Site1	Time : 2008/10/02 - 11:13
Limit : FCC_15.209(961011)_03M_PK	Margin : 6
Probe : CB4_FCC_1-18G(2008-05) - VERTICAL	Power : AC 120V/60Hz
EUT : GPS Trip Recorder	Note : TX-2402

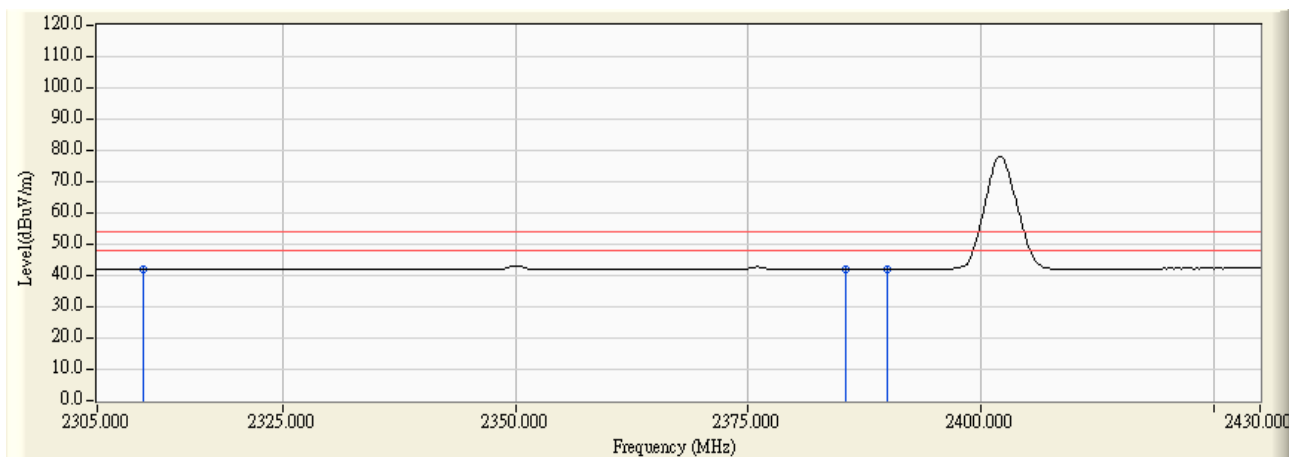


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2310.000	30.823	24.466	55.288	-18.712	74.000	PEAK
2	*	2365.500	31.006	25.502	56.508	-17.492	74.000	PEAK
3		2390.000	31.087	24.565	55.652	-18.348	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Site : Site1	Time : 2008/10/02 - 10:57
Limit : FCC_15.209(961011)_03M_AV	Margin : 6
Probe : CB4_FCC_1-18G(2008-05) - HORIZONTAL	Power : AC 120V/60Hz
EUT : GPS Trip Recorder	Note : TX-2402

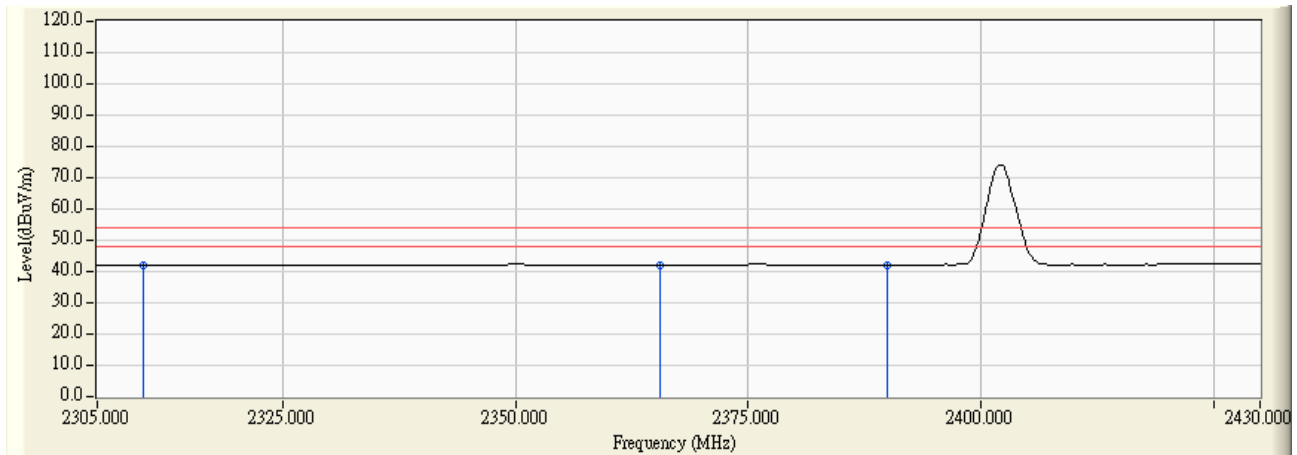


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2310.000	30.823	11.255	42.077	-11.923	54.000	AVERAGE
2	*	2385.500	31.072	11.066	42.138	-11.862	54.000	AVERAGE
3		2390.000	31.087	11.129	42.216	-11.784	54.000	AVERAGE

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Site : Site1	Time : 2008/10/02 - 11:15
Limit : FCC_15.209(961011)_03M_AV	Margin : 6
Probe : CB4_FCC_1-18G(2008-05) - VERTICAL	Power : AC 120V/60Hz
EUT : GPS Trip Recorder	Note : TX-2402

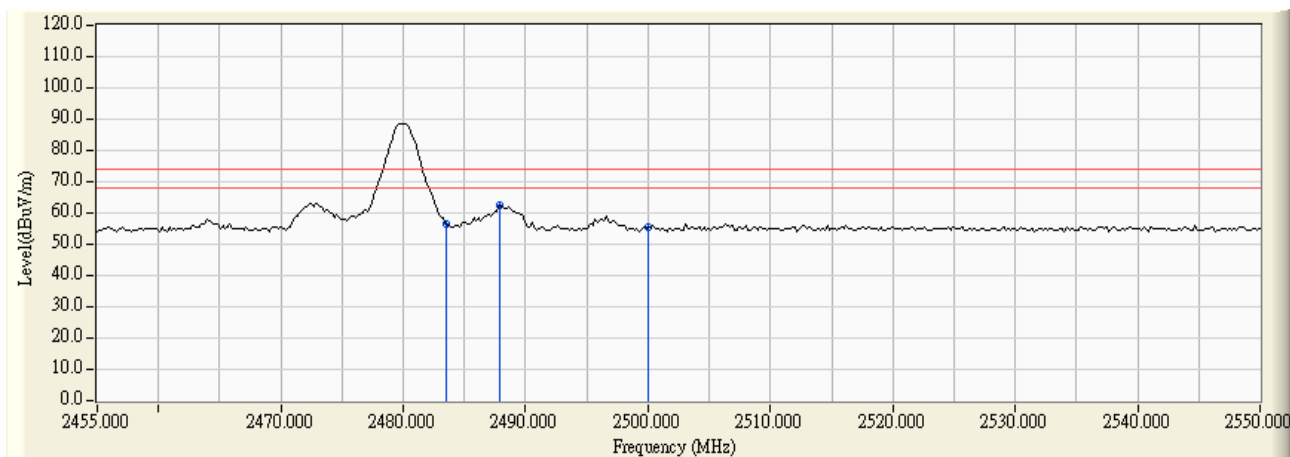


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2310.000	30.823	11.320	42.142	-11.858	54.000	AVERAGE
2	*	2365.500	31.006	11.092	42.098	-11.902	54.000	AVERAGE
3		2390.000	31.087	11.154	42.241	-11.759	54.000	AVERAGE

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Site : Site1	Time : 2008/10/02 - 11:27
Limit : FCC_15.209(961011)_03M_PK	Margin : 6
Probe : CB4_FCC_1-18G(2008-05) - HORIZONTAL	Power : AC 120V/60Hz
EUT : GPS Trip Recorder	Note : TX-2480

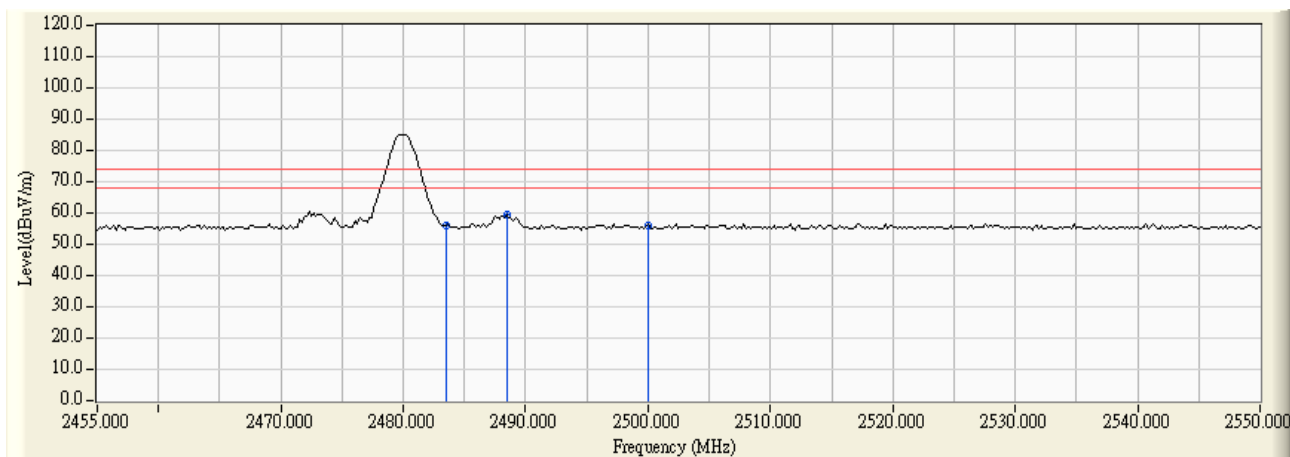


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2483.500	31.407	25.331	56.737	-17.263	74.000	PEAK
2	*	2487.870	31.420	30.964	62.385	-11.615	74.000	PEAK
3		2500.000	31.456	24.127	55.583	-18.417	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Site : Site1	Time : 2008/10/02 - 11:35
Limit : FCC_15.209(961011)_03M_PK	Margin : 6
Probe : CB4_FCC_1-18G(2008-05) - VERTICAL	Power : AC 120V/60Hz
EUT : GPS Trip Recorder	Note : TX-2480

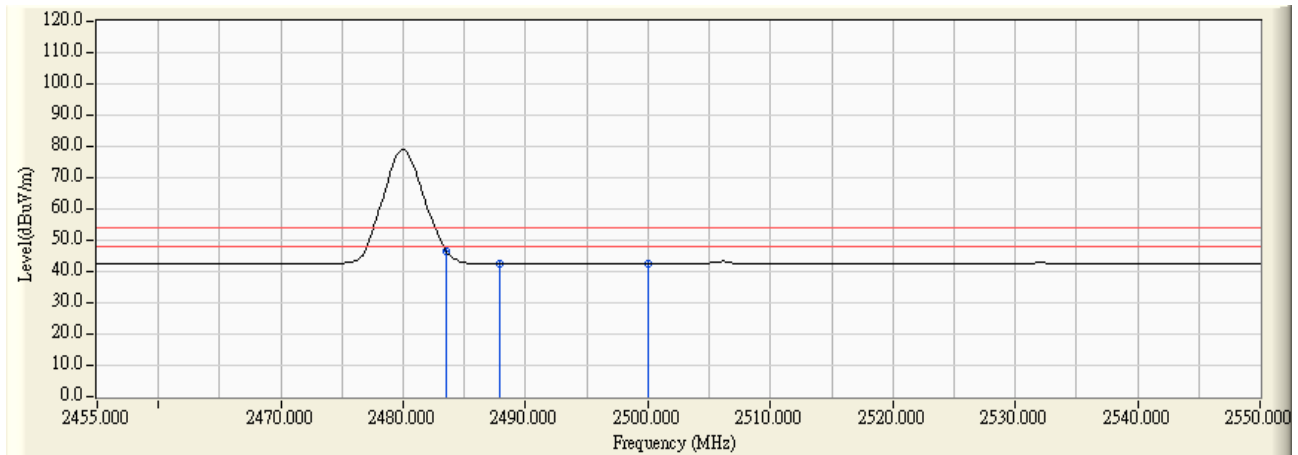


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2483.500	31.407	24.396	55.802	-18.198	74.000	PEAK
2	*	2488.440	31.423	27.862	59.285	-14.715	74.000	PEAK
3		2500.000	31.456	24.758	56.214	-17.786	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Site : Site1	Time : 2008/10/02 - 11:29
Limit : FCC_15.209(961011)_03M_AV	Margin : 6
Probe : CB4_FCC_1-18G(2008-05) - HORIZONTAL	Power : AC 120V/60Hz
EUT : GPS Trip Recorder	Note : TX-2480

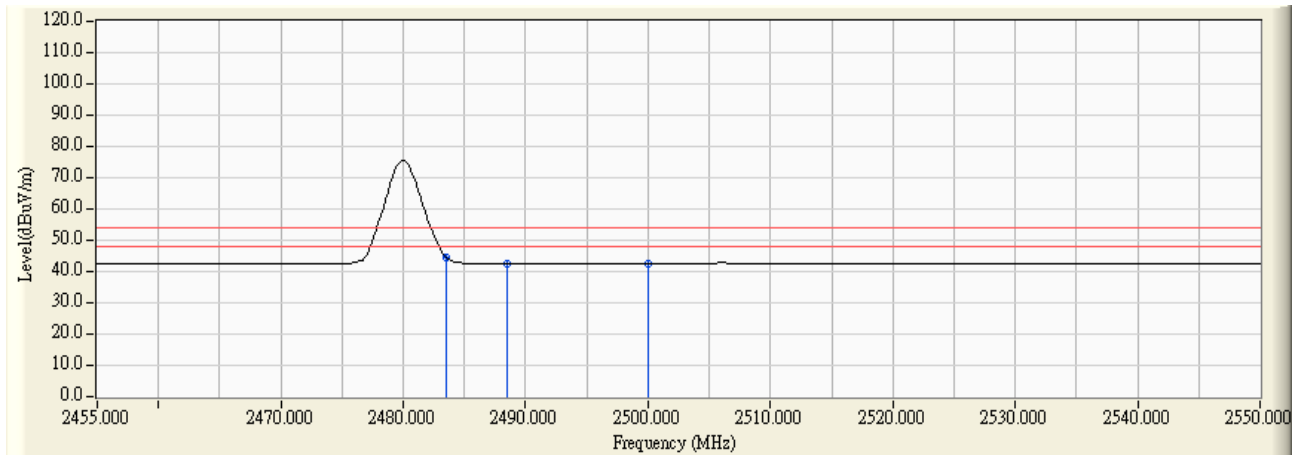


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2483.500	31.407	15.183	46.589	-7.411	54.000	AVERAGE
2	*	2487.870	31.420	11.244	42.665	-11.335	54.000	AVERAGE
3		2500.000	31.456	11.138	42.594	-11.406	54.000	AVERAGE

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Site : Site1	Time : 2008/10/02 - 11:36
Limit : FCC_15.209(961011)_03M_AV	Margin : 6
Probe : CB4_FCC_1-18G(2008-05) - VERTICAL	Power : AC 120V/60Hz
EUT : GPS Trip Recorder	Note : TX-2480



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2483.500	31.407	13.145	44.551	-9.449	54.000	AVERAGE
2	*	2488.440	31.423	11.157	42.580	-11.420	54.000	AVERAGE
3		2500.000	31.456	11.136	42.592	-11.408	54.000	AVERAGE

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

7. Number of hopping frequency

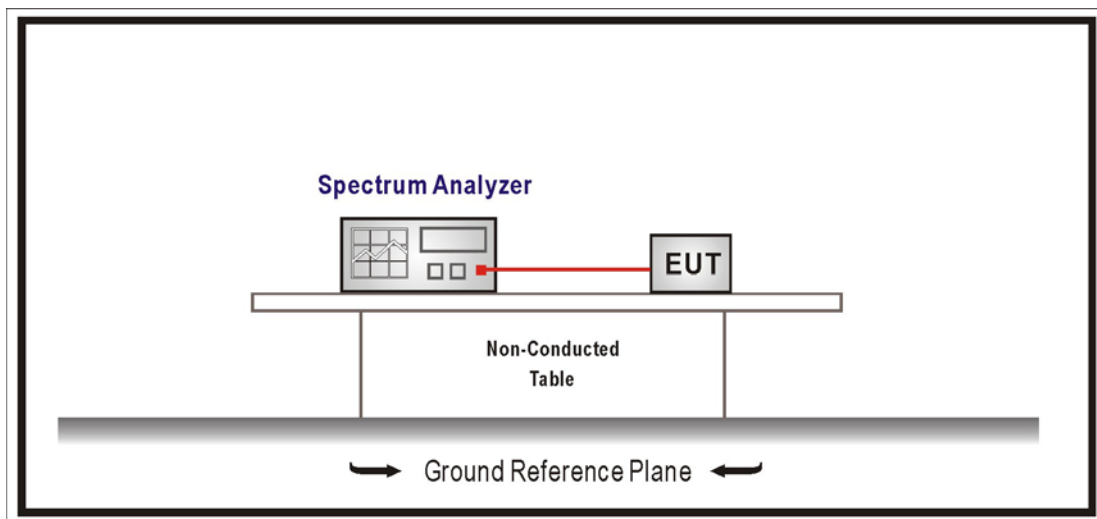
7.1. Test Equipment

The following test equipments are used during the test:

Item	Equipment	Manufacturer	Model No. / Serial No.	Last Cal.
1	Spectrum Analyzer	R & S	FSP / 100561	Jan., 2008
2	No.1 OATS			Sep., 2008

Note: 1. All equipments that need to calibrate are with calibration period of 1 year.

7.2. Test Setup



7.3. Limits

For frequency hopping systems operating in the 902-928 MHz band: if the 20 dB bandwidth of the hopping channel is less than 250 kHz, the system shall use at least 50 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 20 second period; if the 20 dB bandwidth of the hopping channel is 250 kHz or greater, the system shall use at least 25 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 10 second period. The maximum allowed 20 dB bandwidth of the hopping channel is 500 kHz.

For frequency hopping systems operating in the 2400-2483.5 MHz bands, which use fewer than 75 hopping frequencies, may employ intelligent hopping techniques to avoid interference to other transmissions. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 non-overlapping channels are used.

For frequency hopping systems operating in the 5725-5850 MHz band shall use at least 75 hopping frequencies.

7.4. Test Procedures

The EUT was setup according to ANSI C63.4, 2003 and tested according to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements

Span = the frequency band of operation

$RBW \geq 1\%$ of the span , $VBW \geq RBW$

Sweep = auto, Detector function = peak, Trace = max hold

7.5. Test Specification

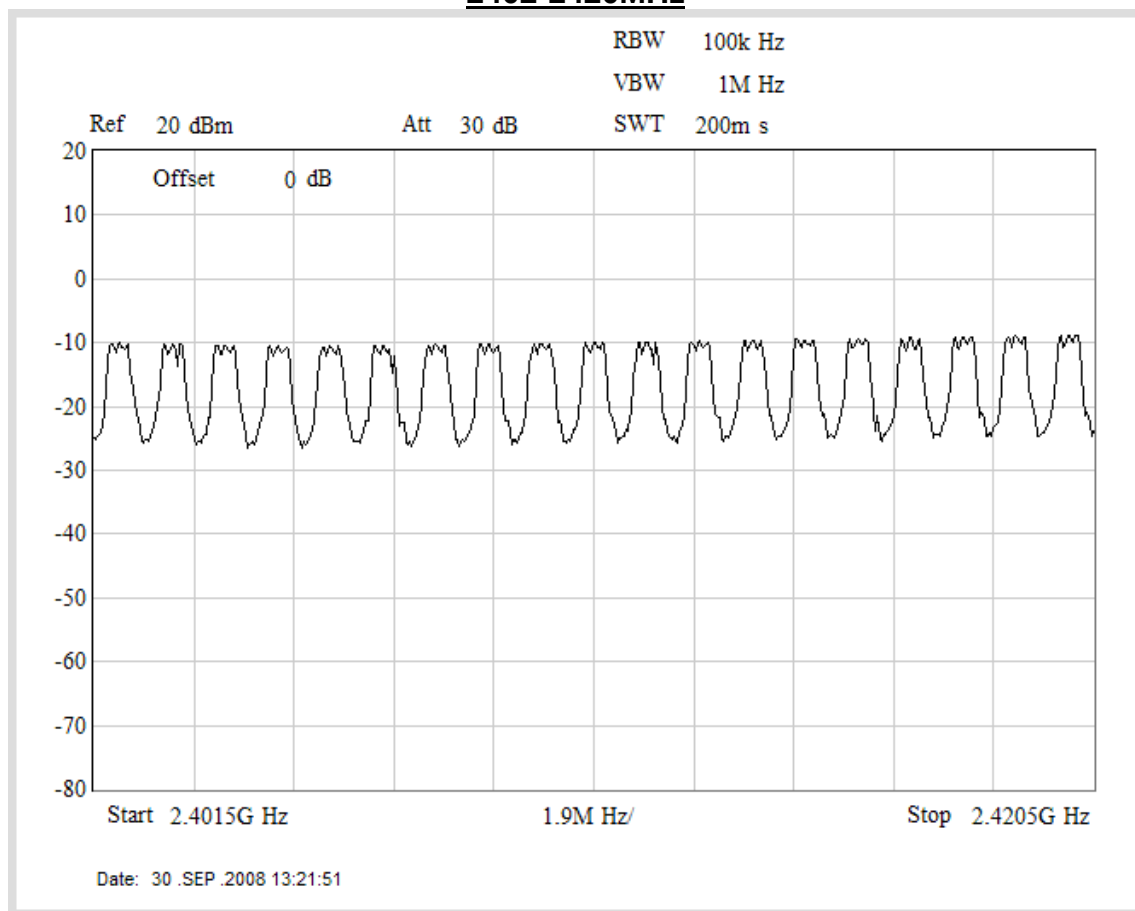
According to FCC Part 15 Subpart C Paragraph 15.247: 2006

7.6. Test Result

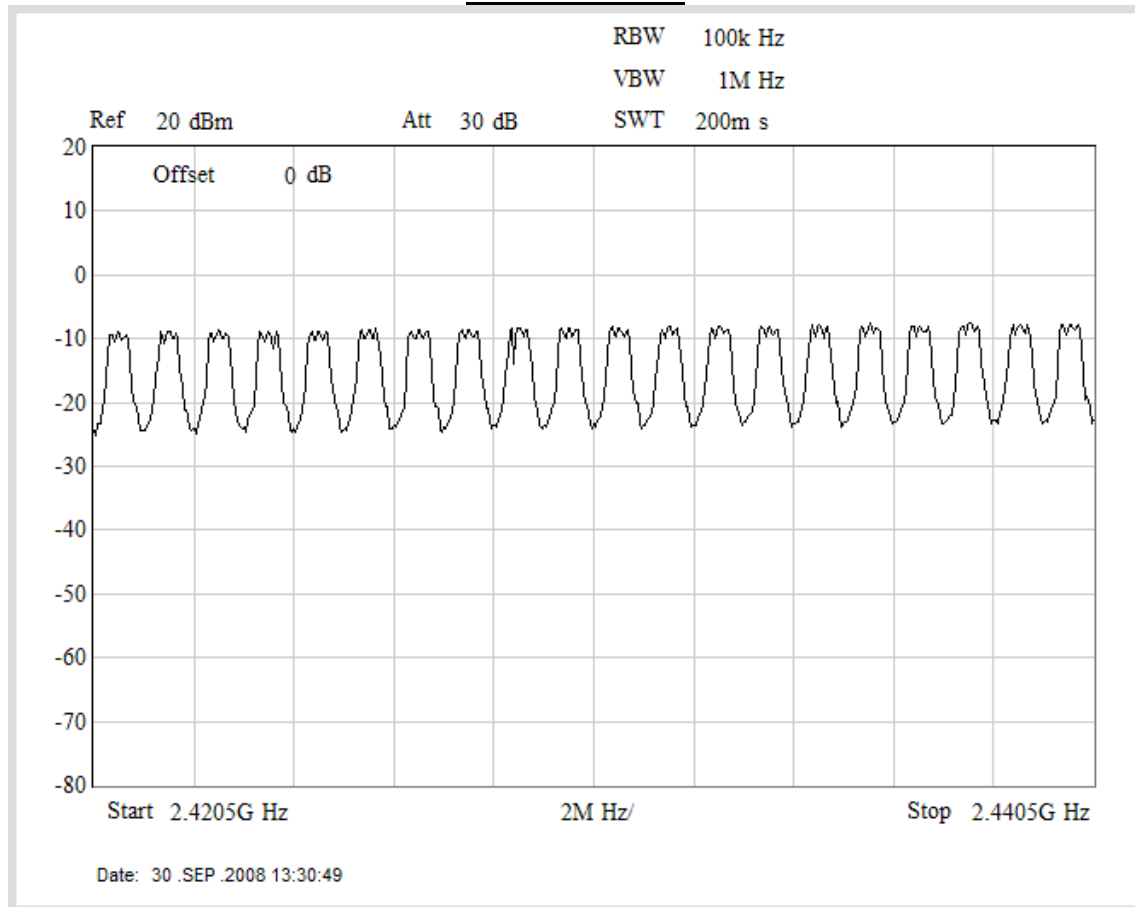
Product	GPS Trip Recorder		
Test Item	Number of hopping frequency		
Test Mode	Mode 1: Transmit		
Date of Test	2008/09/30	Test Site	No.1 OATS

Frequency Range (MHz)	Measure Level (Hopping Channel)	Limit (Hopping Channel)	Result
2402 ~ 2480	79	>75	Pass

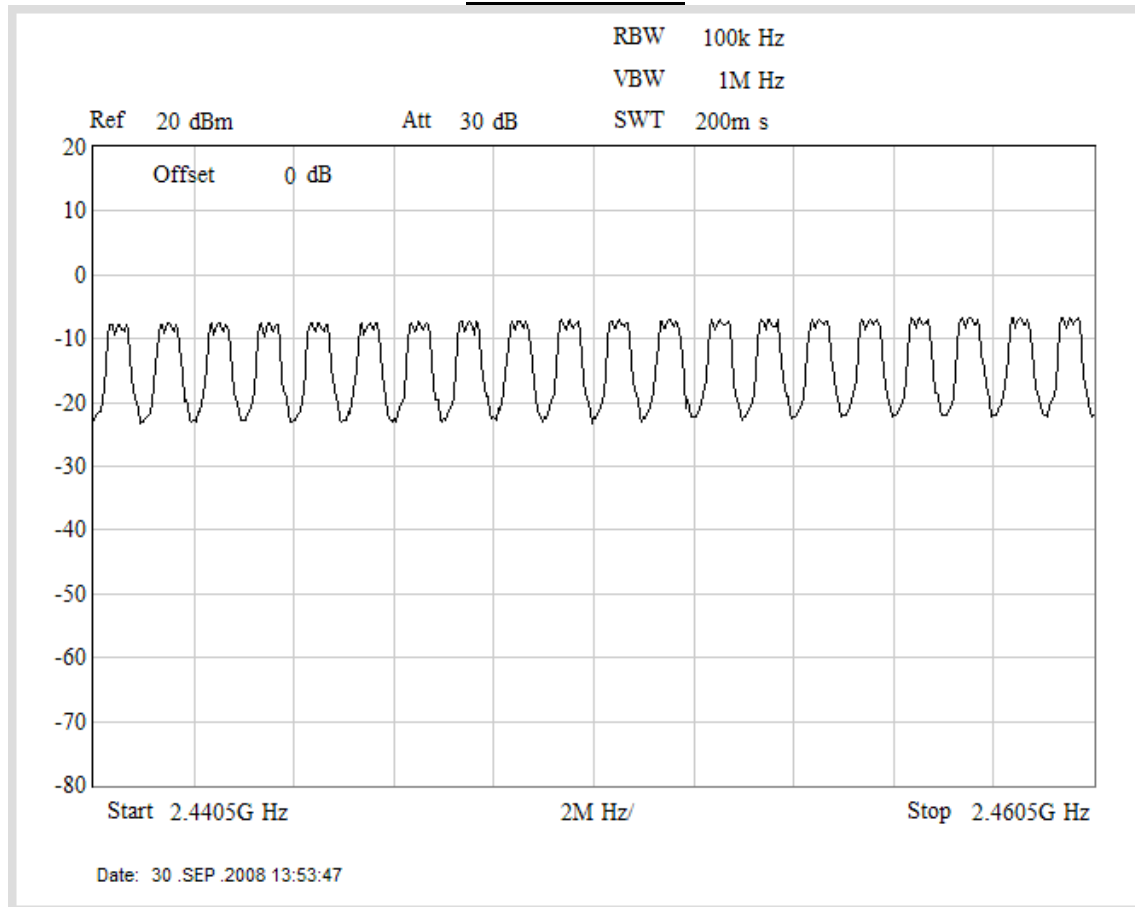
2402-2420MHz



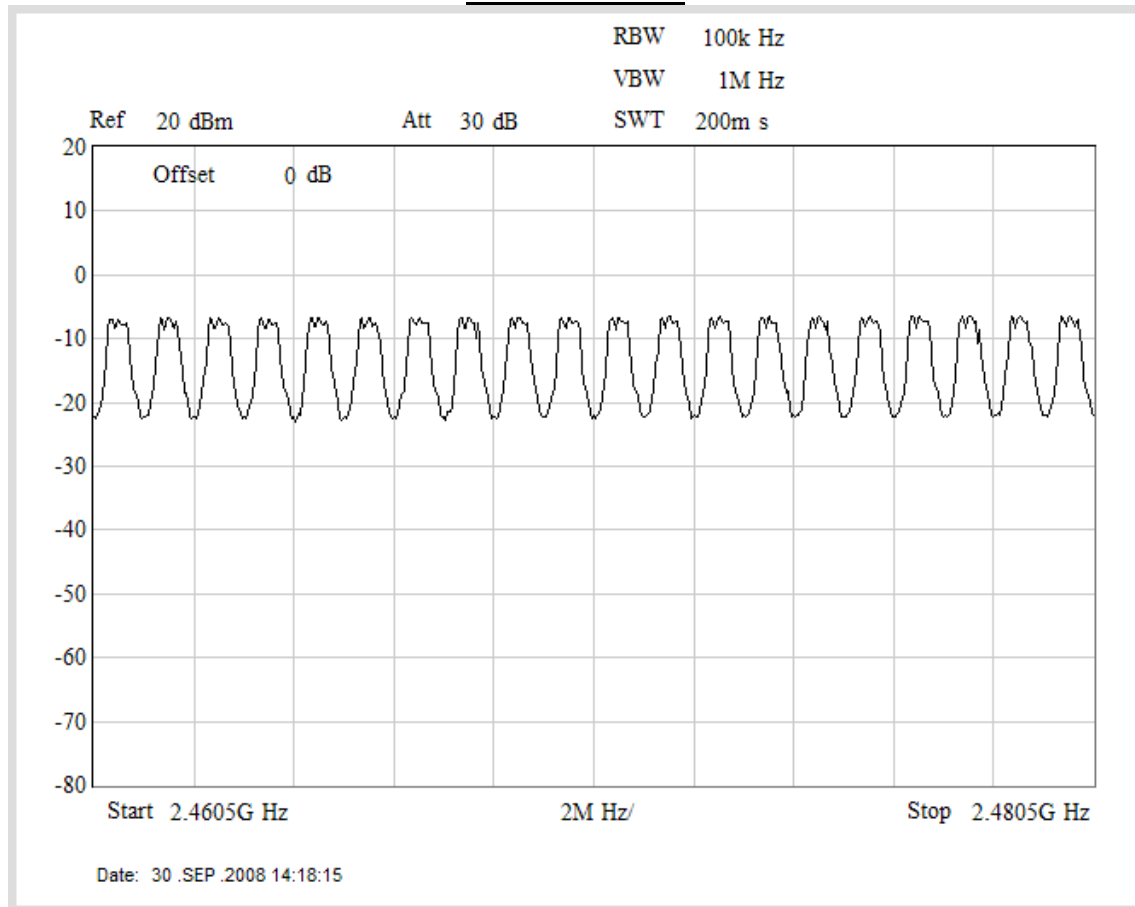
2421-2440MHz



2441-2460MHz



2461-2480MHz



8. Carrier Frequency Separation

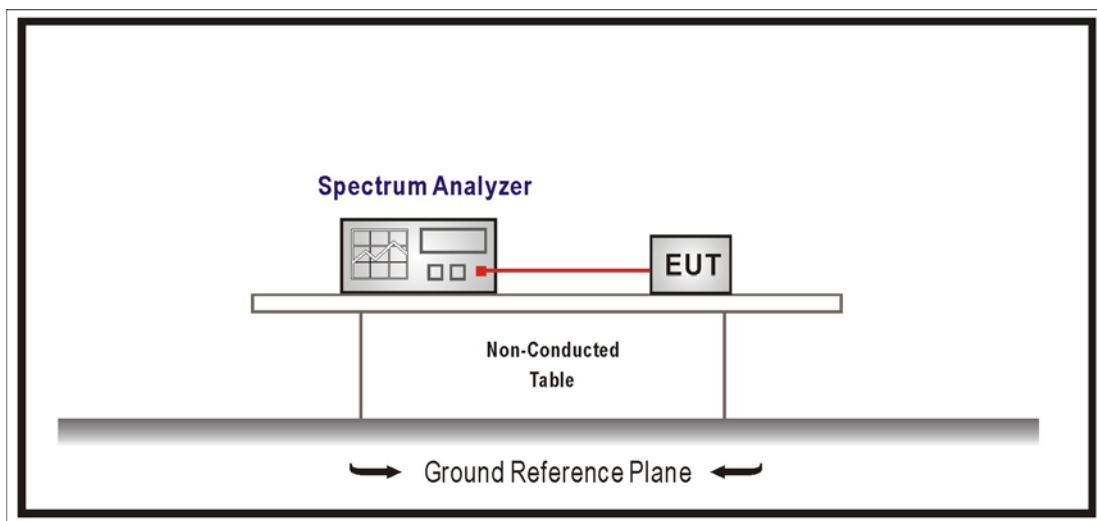
8.1. Test Equipment

The following test equipment are used during the test:

Item	Equipment	Manufacturer	Model No. / Serial No.	Last Cal.
1	Spectrum Analyzer	R & S	FSP / 100561	Jan., 2008
2	No.1 OATS			Sep., 2007

Note: 1. All equipments that need to calibrate are with calibration period of 1 year.

8.2. Test Setup



8.3. Limits

For frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater.

8.4. Test Procedures

The EUT was setup according to ANSI C63.4, 2003 and tested according to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements

Span = wide enough to capture the peaks of two adjacent channels

Resolution Bandwidth (RBW) $\geq$ 1% of the span, VBW $\geq$ RBW

Sweep = auto, Detector function = peak, Trace = max hold

8.5. Test Specification

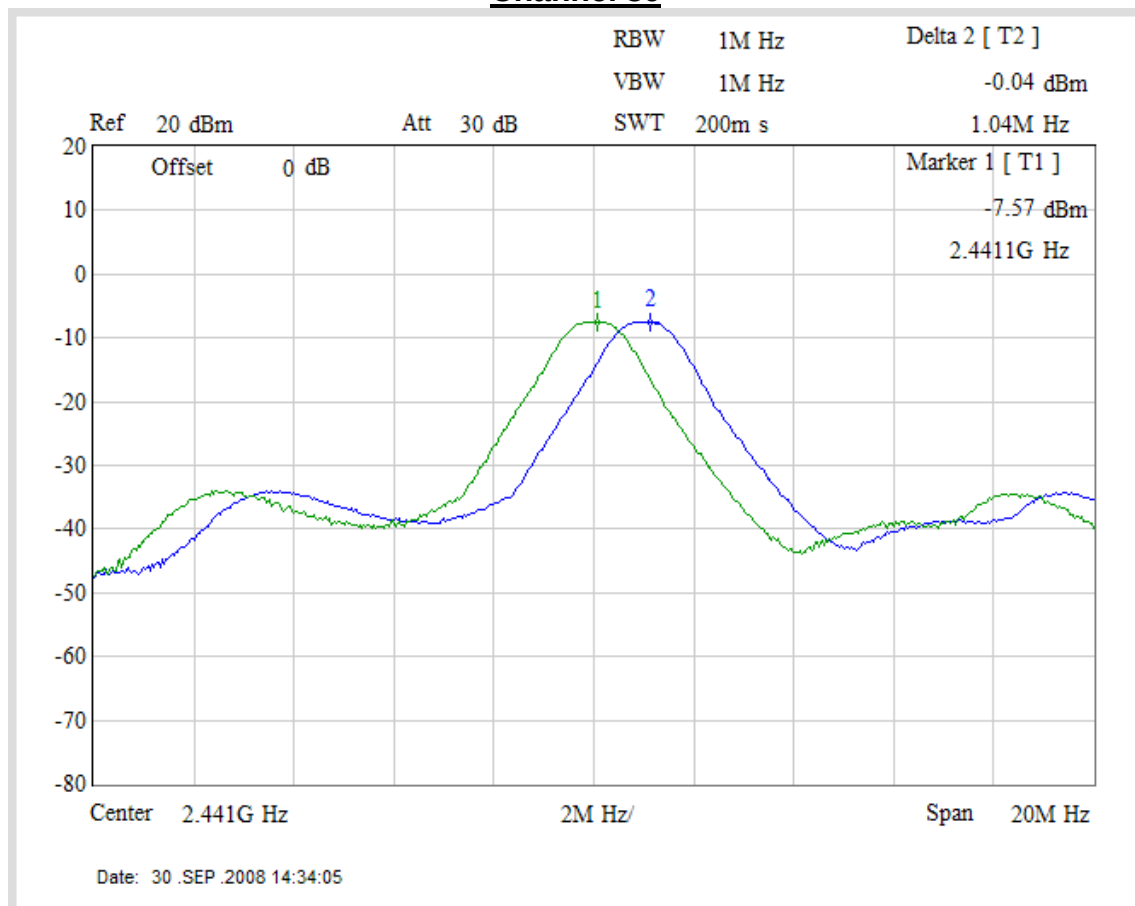
According to FCC Part 15 Subpart C Paragraph 15.247: 2006

8.6. Test Result

Product	GPS Trip Recorder		
Test Item	Carrier Frequency Separation		
Test Mode	Mode 1: Transmit		
Date of Test	2008/09/30	Test Site	No.1 OATS

Channel No.	Frequency (MHz)	Measure Level (kHz)	Limit (kHz)	Result
39	2441.00	1040	>766.4	Pass

Channel 39



9. Occupied Bandwidth

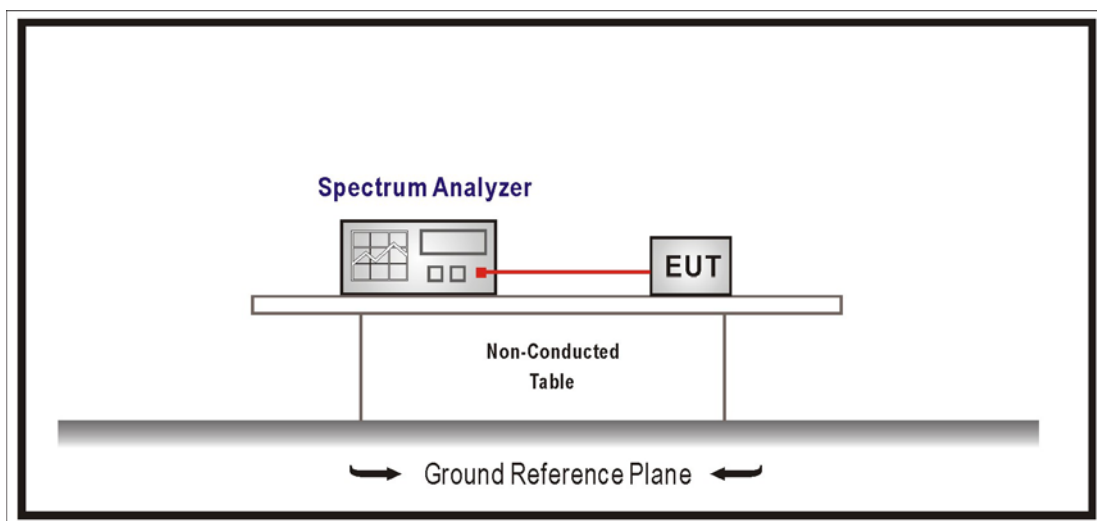
9.1. Test Equipment

The following test equipment are used during the test:

Item	Equipment	Manufacturer	Model No. / Serial No.	Last Cal.
1	Spectrum Analyzer	R & S	FSP / 100561	Jan., 2008
2	No.1 OATS			Sep., 2008

Note: 1. All equipments that need to calibrate are with calibration period of 1 year.

9.2. Test Setup



9.3. Limits

For frequency hopping systems operating in the 902-928 MHz band: if the 20 dB bandwidth of the hopping channel is less than 250 kHz, the system shall use at least 50 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 20 second period; if the 20 dB bandwidth of the hopping channel is 250 kHz or greater, the system shall use at least 25 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 10 second period. The maximum allowed 20 dB bandwidth of the hopping channel is 500 kHz.

For frequency hopping systems operating in the 5725-5850 MHz bands. The maximum 20 dB bandwidth of the hopping channel is 1 MHz.

For frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater.

9.4. Test Procedures

The EUT was setup according to ANSI C63.4, 2003 and tested according to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements

Use the following spectrum analyzer settings:

Span = approximately 2 to 3 times the 20 dB bandwidth, centered on a hopping channel

RBW $\geq$ 1% of the 20 dB bandwidth, VBW $\geq$ RBW

Sweep = auto, Detector function = peak, Trace = max hold

The EUT should be transmitting at its maximum data rate.

9.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247: 2006

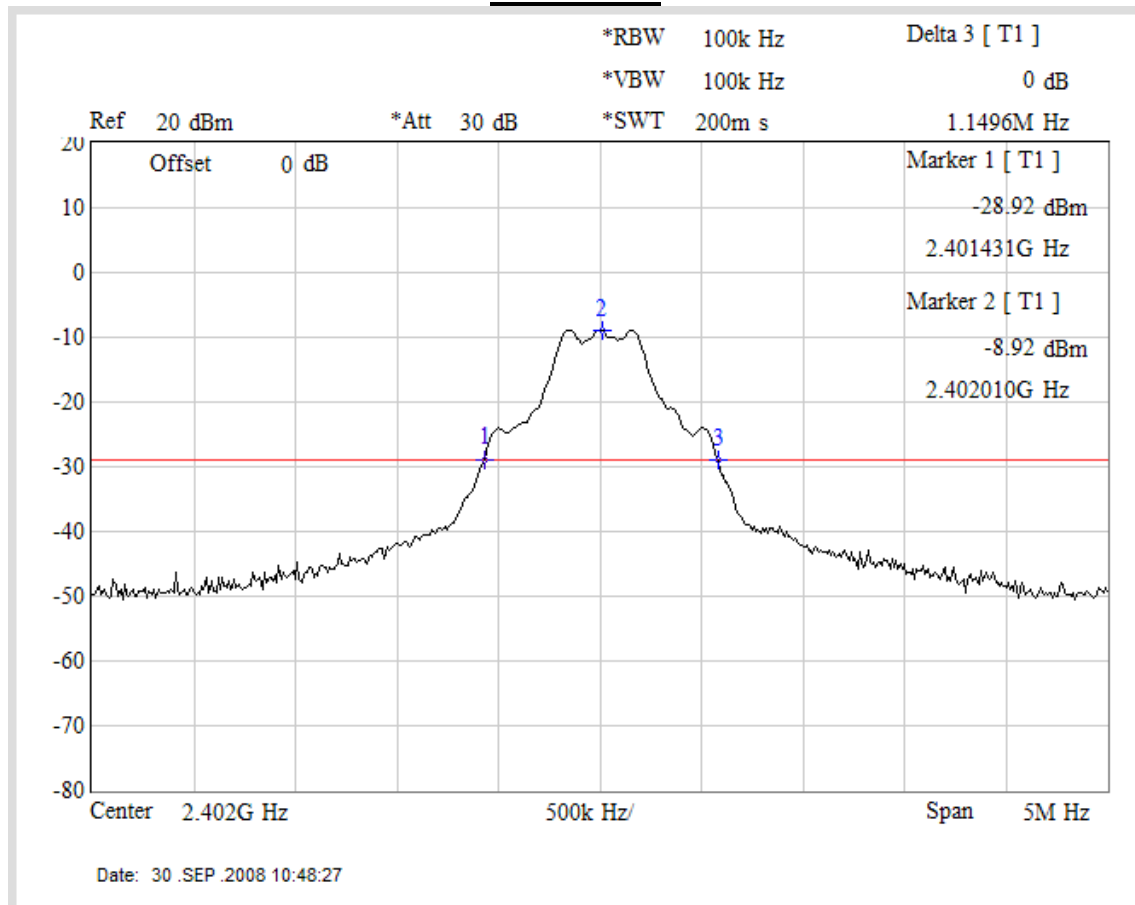
9.6. Test Result

Product	GPS Trip Recorder		
Test Item	Occupied Bandwidth		
Test Mode	Mode 1: Transmit		
Date of Test	2008/09/30	Test Site	No.1 OATS

1M-GFSK Modulation, PRBS Packet Type

Channel No.	Frequency (MHz)	Measure Level (MHz)	Limit (MHz)	Result
00	2402.00	1.1496	--	Pass

Channel 00

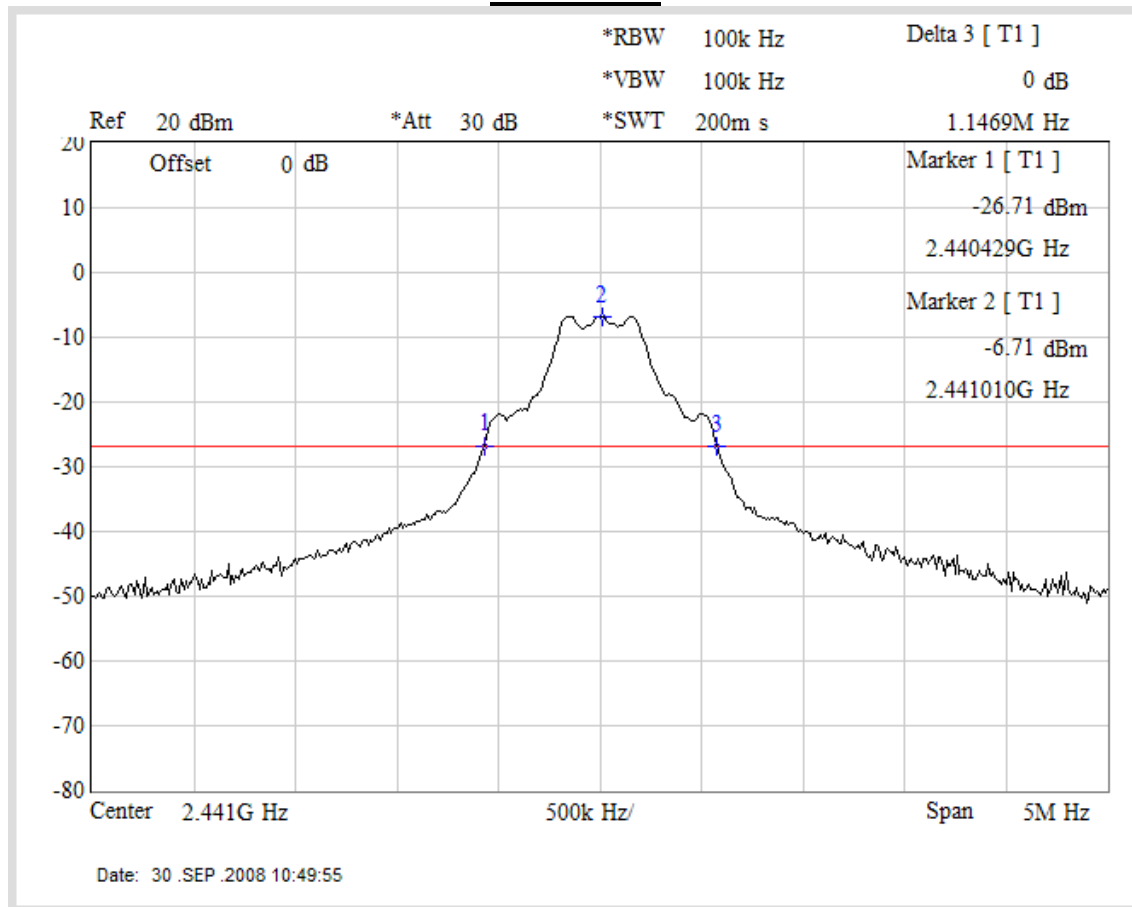


Product	GPS Trip Recorder		
Test Item	Occupied Bandwidth		
Test Mode	Mode 1: Transmit		
Date of Test	2008/09/30	Test Site	No.1 OATS

1M-GFSK Modulation, PRBS Packet Type

Channel No.	Frequency (MHz)	Measure Level (MHz)	Limit (MHz)	Result
39	2441.00	1.1469	--	Pass

Channel 39

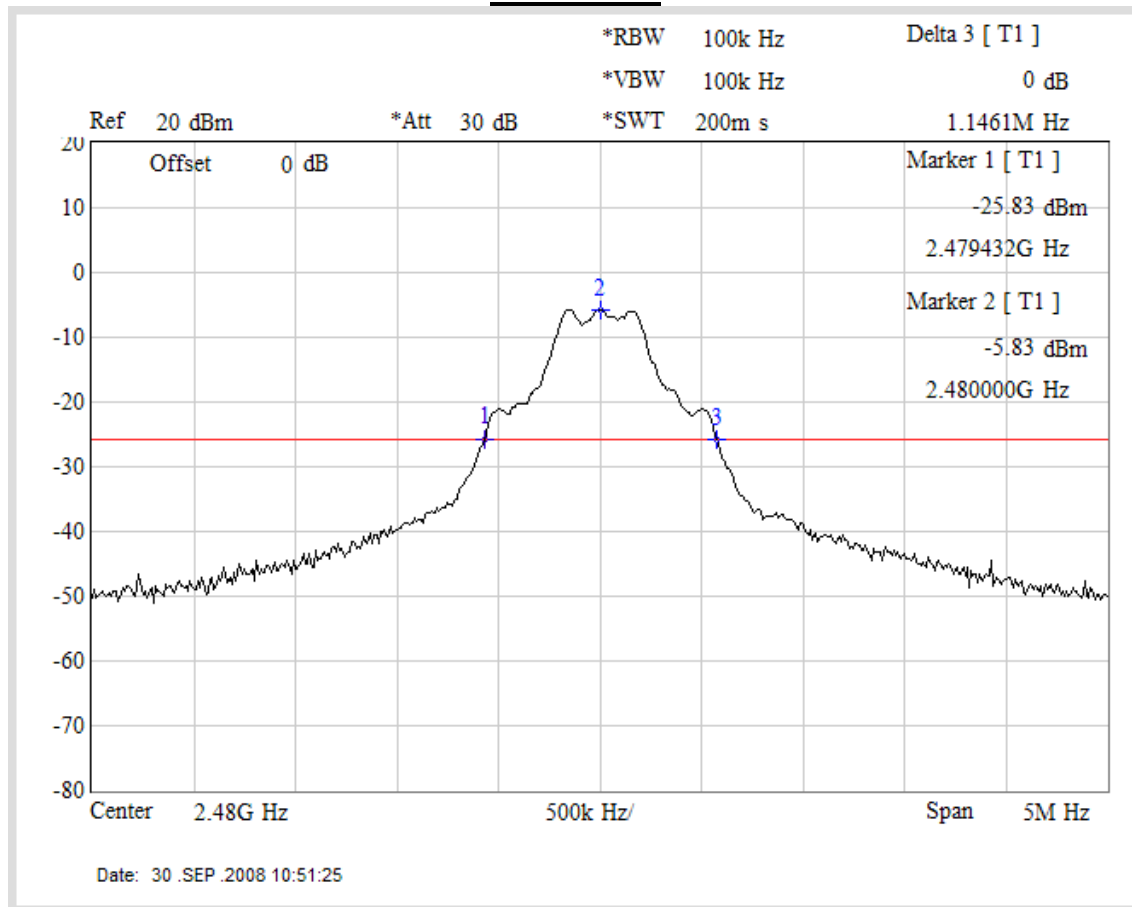


Product	GPS Trip Recorder		
Test Item	Occupied Bandwidth		
Test Mode	Mode 1: Transmit		
Date of Test	2008/09/30	Test Site	No.1 OATS

1M-GFSK Modulation, PRBS Packet Type

Channel No.	Frequency (MHz)	Measure Level (MHz)	Limit (MHz)	Result
78	2480.00	1.1461	--	Pass

Channel 78



10. Dwell Time

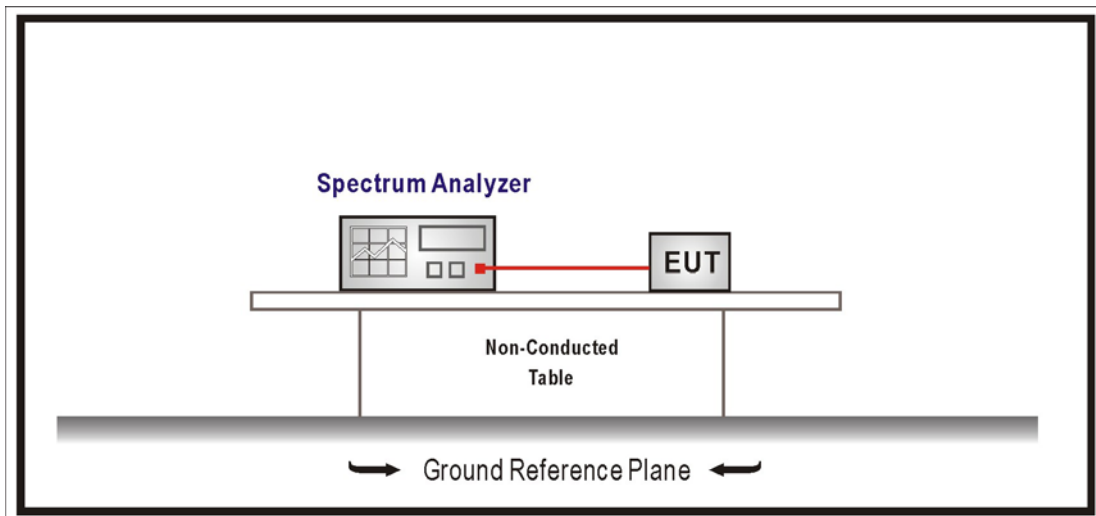
10.1. Test Equipment

The following test equipment are used during the test:

Item	Equipment	Manufacturer	Model No. / Serial No.	Last Cal.
1	Spectrum Analyzer	R & S	FSP / 100561	Jan., 2008
2	No.1 OATS			Sep., 2008

Note: 1. All equipments that need to calibrate are with calibration period of 1 year.

10.2. Test Setup



10.3. Limits

For frequency hopping systems operating in the 902-928 MHz band: if the 20 dB bandwidth of the hopping channel is less than 250 kHz, the system shall use at least 50 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 20 second period; if the 20 dB bandwidth of the hopping channel is 250 kHz or greater, the system shall use at least 25 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 10 second period. For frequency hopping systems operating in the 2400-2483.5 MHz bands. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed. For frequency hopping systems operating in the 5725-5850 MHz bands. The average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 30 second period.

10.4. Test Procedures

The EUT was setup according to ANSI C63.4, 2003 and tested according to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements

Span = zero span, centered on a hopping channel

RBW = 1 MHz, VBW $\geq$ RBW

Sweep = as necessary to capture the entire dwell time per hopping channel

Detector function = peak, Trace = max hold

10.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247: 2006

10.6. Test Result

Product	GPS Trip Recorder		
Test Item	Dwell Time		
Test Mode	Mode 1: Transmit		
Date of Test	2008/09/30	Test Site	No.1 OATS

Occupancy Time of Frequency Hopping System-DH 5

A) 2402MHz Test Time Period: $0.4 \times 79 = 31.6\text{sec}$, Hopping Times Within 1sec: $5/20\text{msec} = 250 / \text{sec}$

The Maximum Occupancy Time Within 31.6sec: $0.00310 \times (250/79) \times 31.6 = 0.31\text{sec}$.

B) 2441MHz Test Time Period: $0.4 \times 79 = 31.6\text{sec}$, Hopping Times Within 1sec: $5/20\text{msec} = 250 / \text{sec}$

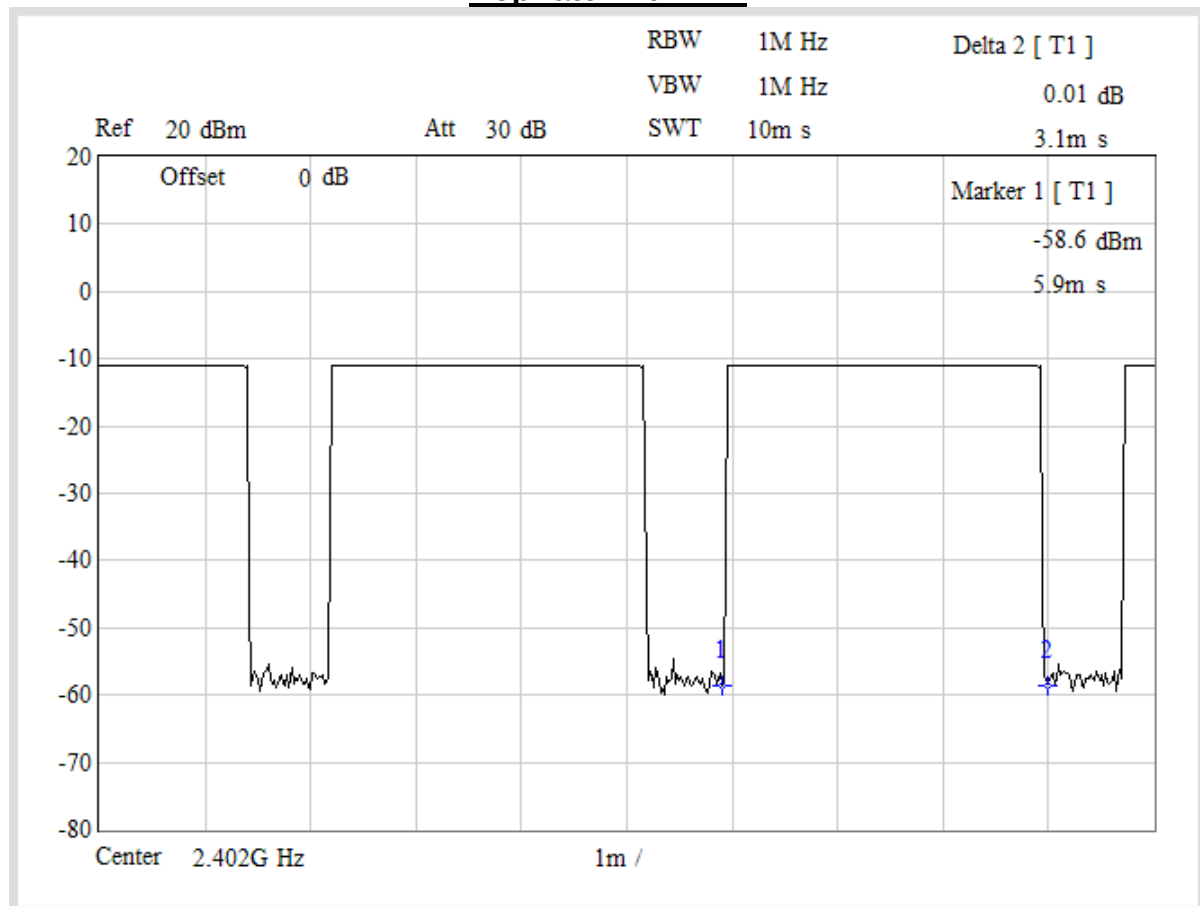
The Maximum Occupancy Time Within 31.6sec: $0.00309 \times (250/79) \times 31.6 = 0.309\text{sec}$.

C) 2480MHz Test Time Period: $0.4 \times 79 = 31.6\text{sec}$, Hopping Times Within 1sec: $5/20\text{msec} = 250 / \text{sec}$

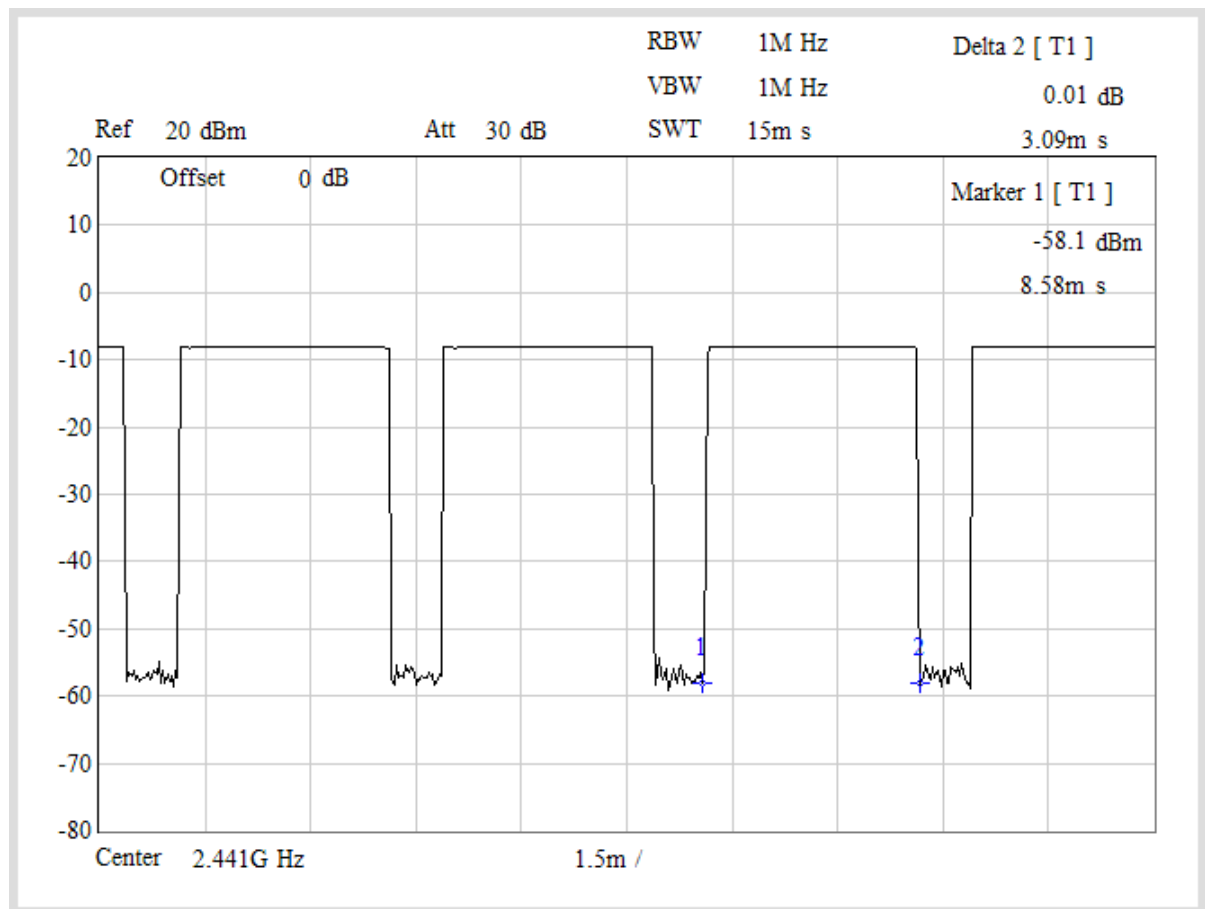
The Maximum Occupancy Time Within 31.6sec: $0.00302 \times (250/79) \times 31.6 = 0.302\text{sec}$.

Test Result: The Average Occupancy Time of Each Highest , Middle and Lowest Channel Is Less Than 0.4sec , And Corresponds to The Standard .

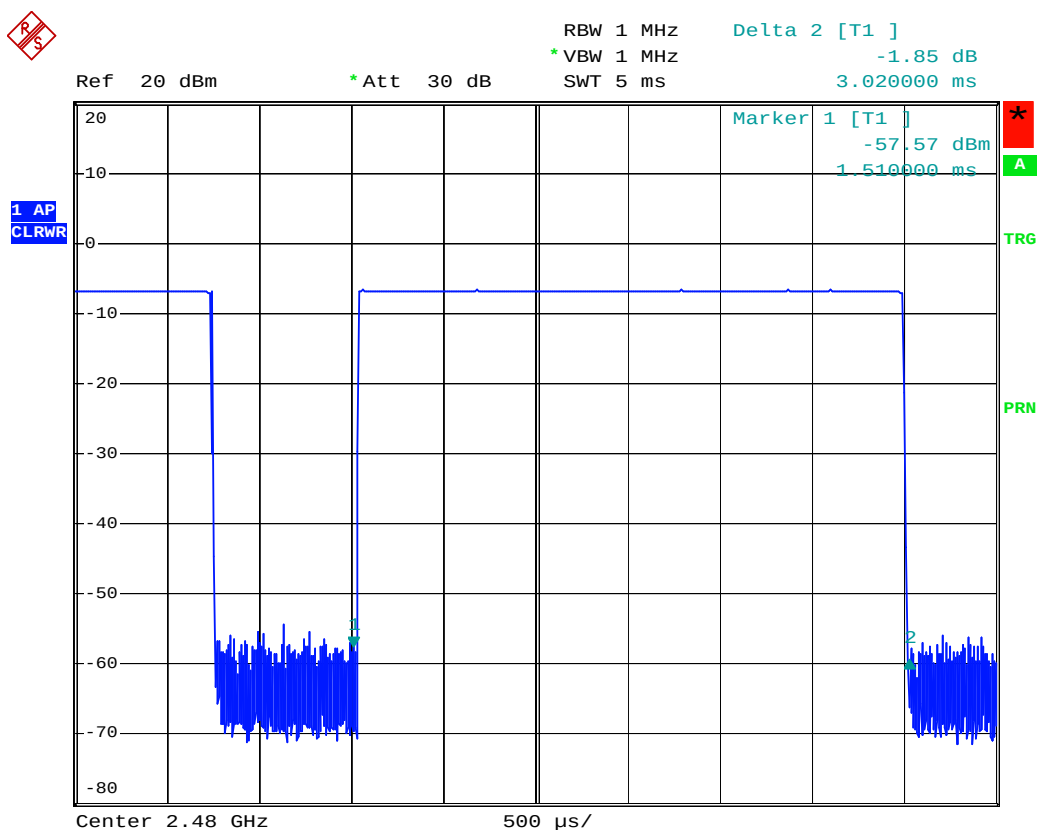
Hop rate-2402MHz



Hop rate-2441MHz

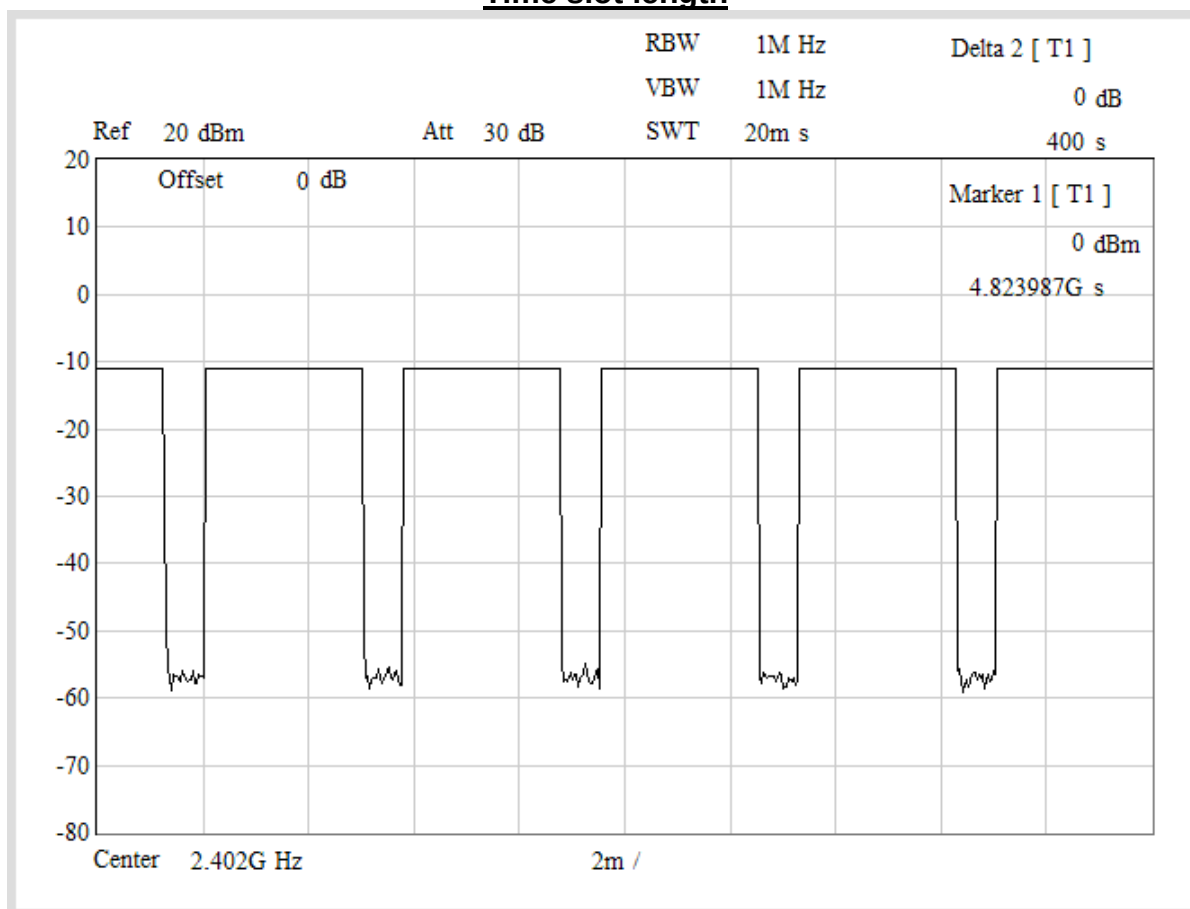


Hop rate-2480MHz



Date: 30.SEP.2008 14:54:18

Time slot length



Note: Dwell time = time slot length * hop rate / number of hopping channels * period